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ABSTRACT

The Wilderness Risk Managers Committee (WRMC), a consortium of outdoor schools and organizations, works toward better understanding and management of risks in the wilderness. Among other activities, the WRMC gathers data on incidents and accidents from member organizations and other wilderness-based programs. This book compiles incident data for 1991-97, but most incidents occurred in 1995-97. Section 1 defines terms and provides a theoretical foundation for understanding how accidents happen. "Teaching Safety Awareness" (Tod Schimelpfenig) distinguishes among accident causes and recommends looking at every actual or potential incident as a combination of human and environmental factors. Hazards are listed in the categories of the supervisor, the executive, support staff, governance bodies, client/student admissions, equipment, and educational practices. Section 2 presents database profiles of total hours spent in each program activity, numbers of injuries and illnesses, primary causes of injuries, and injury rates by activity. Section 3 contains narratives of near-miss incidents, or close calls, where safety was compromised but no injury occurred. Narratives include cause, contributing cause, activity, incident description, program analysis, and additional WRMC analysis, and are arranged by activity: camping, cooking, animals and insects, climbing, backpacking and hiking, snow, canoeing, ropes courses, initiative games, transportation and vehicles, illnesses, and participant behavior. Section 4 discusses the need for more consistent data collection and better quality of reporting. An appendix describes the incident reporting project and how to report an incident. Reporting forms are included. (SV)

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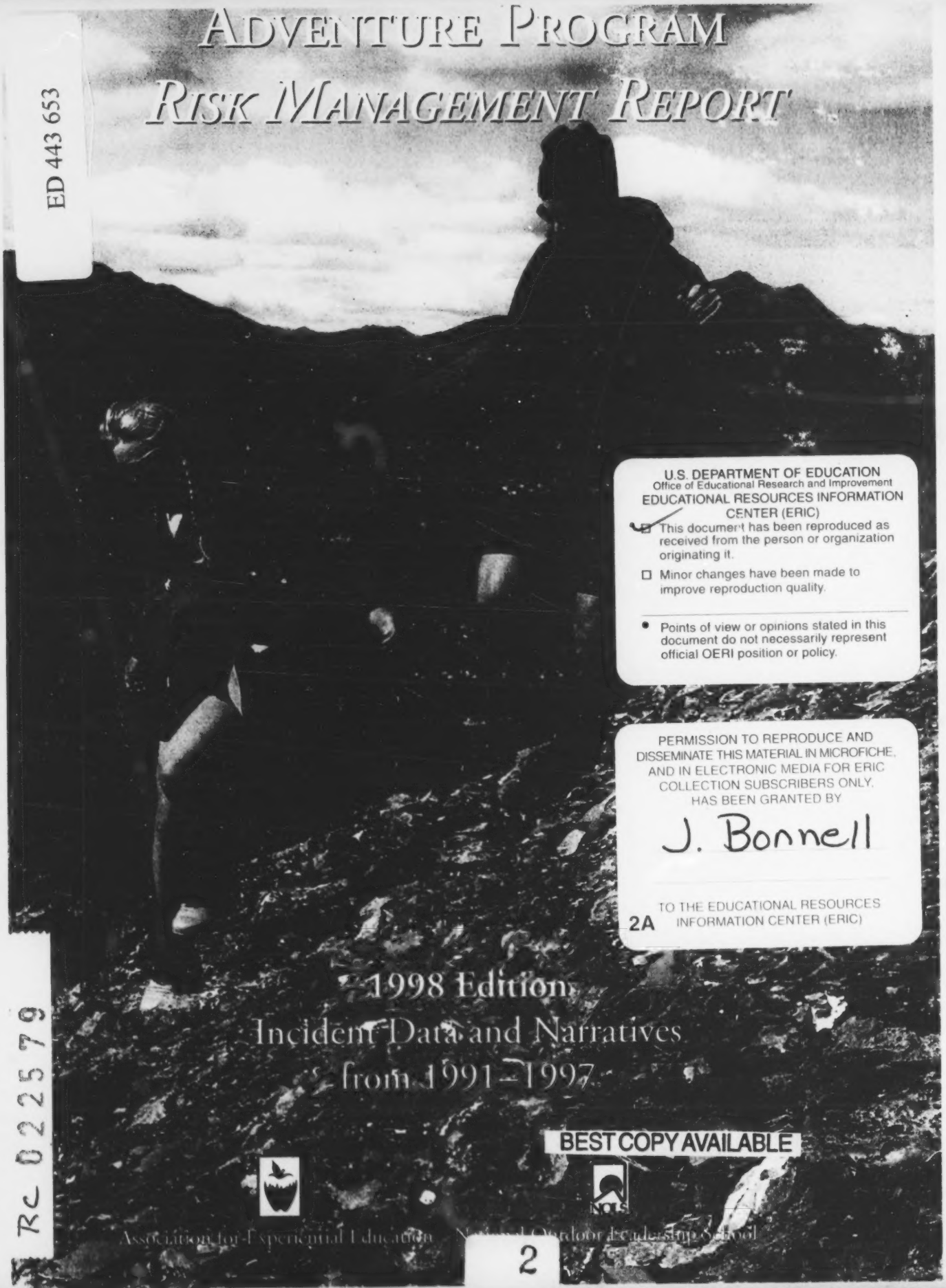
Adventure Program Risk Management Report



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Incident Data and Narratives
from 1991–1997

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ADVENTURE PROGRAM RISK MANAGEMENT REPORT:

1998 EDITION

Narratives and Data
from
1991 - 1997

Edited by:

Drew Leemon
Tod Schimelpfenig
Sky Gray
Shana Tarter
Jed Williamson

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Boulder, Colorado

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Michael Chaladorf, Richard Barrack and Dori MacDonnold descending from a peak in the Brooks Range, Alaska.
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Special thanks goes to those people who have been instrumental in helping get this report completed: Tod Schimelpfenig for believing in the value and necessity of compiling incident data and keeping the ball rolling after Alan Hale; Brien Sheedy and Andy Cline, NOLS instructors, who helped enter data into the database; Clark Lacy, NOLS Technical Support and Training Assistant, for his patience and tutoring in File Maker Pro®; Debbie Derbish of NOLS for her assistance and willingness to rescue me from the myriad of formatting jams I end up in; and Karyn Moore, Publications and Marketing AEE, for getting the manuscript published.

To all of you our heartfelt THANKS

SPECIAL RECOGNITION

The completion of this book is largely due to the diligence, belief and effort of Drew Leemon, Risk Management Director for NOLS. Without his tireless hours of collecting, organizing and inputting much of the data, the publication of this book would not have been possible.

The last publication of this book was in 1995 and is one of AEE's best sellers. Thus it is clear that the incident reporting project information contained in this book is a major contribution to the profession. You can support future publications by using the incident reporting form and submitting it to AEE.

Thank you, Drew for your patience and for continuing to provide leadership, direction and information to the adventure education field and to NOLS who supported Drew's time and effort; it is needed and appreciated.

Sky Gray,
AEE Director of Accreditation & WRMC Committee Member

INTRODUCTION

In 1984, Alan Hale established the National Safety Network (NSN) to address safety issues in adventure-based education programs. In 1992, Hale, handed over the project to the Wilderness Risk Managers Committee who in conjunction with the Association for Experiential Education, The University of New Hampshire and the National Outdoor Leadership School published Hale's data in the *Adventure Program Risk Management Report; 1995 Edition; Incident Data & Narratives from 1989 - 1990.*

Hale's original goals for the NSN continue to apply. They are: "speed the development and circulation of vital accident and injury data to raise safety consciousness, demonstrate insurability, develop a tool for staff training, and contribute to the maturing of the adventure education industry." [1]

This report includes incident data submitted from 1991 - 1997. The transition from Hale to the WRMC has resulted in a lapse in the reporting. While the goal as stated in the 1995 report was to publish this data on an annual basis it is only now, three years later, that we feel there is sufficient data to go to press. In this current data set 82% of the incidents occurred between 1995 - 1997. It is our hope that this project will continue to build momentum and that this type of information can continue to be published regularly.

Both backcountry/wilderness-based and facility-based (i.e., ropes courses, climbing towers etc.) programming incidents continue to be included. The goals of the database and publication are:

- To provide a tool to educate interested parties (insurance industry, program managers, public land managers, participants, etc.) about the risk management implication of different adventure activities.

- To provide a significant and comprehensive incident database upon which statistical analysis can be done to provide a collective knowledge base and reliable information source for the field of adventure programming.

- To provide a central reporting forum for incidents in adventure programming.

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[1] A. Hale (1984). Annual Review - 1984. National Safety Network

- To enhance the collective judgment of the field of adventure programming by examining trends within it.

We hope you find the information contained in this book useful and educational. We strongly encourage all programs to contribute to this effort by submitting incident data.

SECTION 1: THEORETICAL FOUNDATIONS

Definition of Terms

Reprinted in part from the 1995 report

Risk Management: The management of risk factors surrounding an activity to reduce the accident potential.

Accident Potential: An intangible variable produced by the interaction of human and environmental hazards. Also, a conceptualization of the result of people interacting with environments that indicates increasing or decreasing danger or risk of injury.

Accident: An unplanned, potentially dangerous occurrence that results in injury, property damage, or a close call (near miss). (Caution: never equate the word accident with injury.)

Near miss (actually a close call): A potentially dangerous situation were safety was compromised but that did not result in reportable injury. An unplanned and unforeseen event. This rules out situations such as routine top rope falls, failure to roll a kayak for a beginning student, or a fall on the trail with no injury. A situation where those involved express relief when the incident ends without harm.

Motivation or behavioral incident: Examples would be unwillingness to participate, running away, alcohol or drug use, assaultive behavior, suicidal ideation, or an emotional or psychological situation that compromises the students' ability to participate in the program.

Participant (or program) Hours: A measurement of program size. The product of multiplying the number of hours of participation in an activity by the number of participants. Program hours would also include program staff participation in the activity.

Editor's note: The following article was originally written for publication by the National Outdoor Leadership School and intended for NOLS staff and students. It is based on work by Alan Hale and Jed Williamson and Dan Meyer. This article is included in this report as a tool for program managers, field instructors and leaders to better understand and utilize the incident accounts in this report and to educate and train staff and participants. The article is re-printed in its original form with some specific references to NOLS programs and procedures.

Teaching Safety Awareness

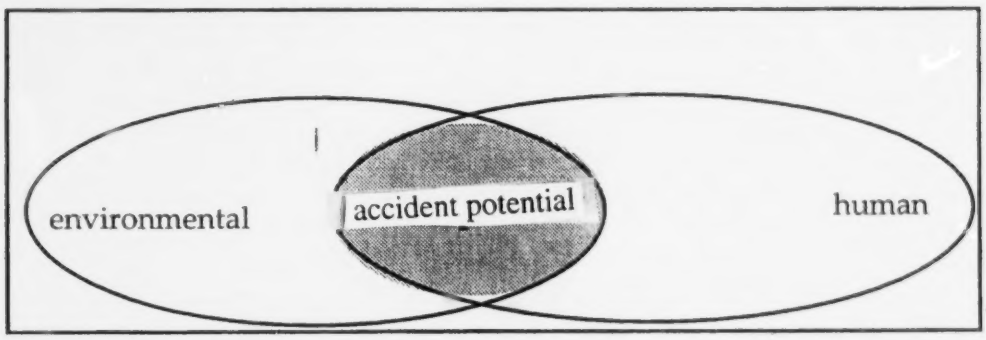
Tod Schimelpfenig
NOLS Rocky Mountain Branch Director

NOLS instructors develop students' risk management skills by insisting on commitment to our priority of protecting the well-being of individuals, by identifying hazards and management strategies, and by teaching both outdoor skills and leadership. This paper describes two ways to structure a discussion on how accidents happen. These models are useful as planning tools, teaching tools, and evaluation tools; they can guide our thoughts before an activity begins, help create vocabulary and structure for a safety discussion, and assist us in identifying factors and causes of incidents.

Common themes in both models are objective (environmental) hazards, subjective (human) hazards and a mechanism (an unsafe act) for the incident.

Dynamics of Accidents Theory: Environmental Hazards + Human Factors = Accident Potential

Alan Hale of the National Safety Network developed the Dynamics of Accidents Theory. He divided accident potential into two broad areas that interact to produce accidents—human and environmental factors. The greater the overlap, the greater the accident potential. For example, the combination of wet, uneven terrain and a human acting in haste create the potential for a fall. A pot of boiling water on a stove and a distracted cook create the potential for a burn from spilled water. A pot of water on a stable stove with an attentive cook and a neat kitchen lessens the potential for an incident.



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The Williamson/Meyer Matrix

Jed Williamson first developed this matrix in the late 70s, and it continues to evolve today. In addition to the objective—the unsafe condition, and the subjective—the judgment errors, Jed clearly adds the mechanism—the unsafe act.

PRINCIPLE CAUSES OF ACCIDENTS IN OUTDOOR PURSUITS

A Matrix Developed and Revised by Dan Meyer and Jed Williamson 1979-94

Unsafe Conditions	Unsafe Acts	Judgment Errors Due To:
•Swift Water	•Poor Position	•Desire To Please Others
•Loose/Falling Rock/Snow Objects	•Improper Procedure	•Sticking to a Schedule
•Animals/Plants	•Inadequate Food/Water	•Mis-Perception
•Improper Clothing/Equipment	•Unsafe Speed	•Unexpected Situation
•Unexpected Weather	•Inadequate Instruction/Supervision	•Fatigue
•Inadequate Area Security		•Distraction

Objective versus Subjective Hazards

Objective hazards are usually quantifiable. They represent the overall condition of the environment. With experience and practice we can improve our ability to see and understand weather, wild animals, rockfall, avalanche and moving water. We can also assess our level of fitness and health, whether we are warm and well nourished, or dehydrated, cold and hungry.

Subjective hazards are the expression of our humanness. They are our personality, our attitudes and states of mind. I believe human error causes most incidents. Human error causes 80% of aircraft accidents and, according to an unpublished study in Teton Park, the majority of backcountry incidents as well. It is insightful how easy it is to think up a long list of human factors in incidents.

Unsafe Acts

The most common unsafe acts on NOLS courses are slips and falls in non-climbing situations and overuse/physically strenuous actions. We also see stove fires, rolling or falling rock, slips on snow and failure to follow instructions. Accidents in North American Mountaineering lists the top five immediate causes of accidents as: fall on rock, slip on snow, falling rock or object, exceeding abilities and avalanche.

To stimulate a presentation on how accidents happen, or a review of an incident, I've prepared a list, by no means exhaustive, of objective and subjective hazards and unsafe acts.

Objective/Environmental Hazards - Unsafe Conditions

altitude
animals
avalanche
cold water
currents, tides and surf
deadfall
deep snowpack
deep water
elephant traps
falling trees
flash floods
illness
insects
lightning
loose rock and boulders
moving water
rockfall
stoves and fires
strainers in rivers
uneven terrain
underfoot
vehicles
visibility
weather
wet or slippery terrain

Unsafe Acts

cooking
errors in planning
exceeding our ability
failed to follow instructions
fall on rock
fall on snow
fall/slip
games
haste, rushing to meet schedule
inadequate supervision
ineffective instruction
inappropriate role modeling
lost
poor hygiene
poor position
poor technique
spilled hot water
stove fire
technical system fails
unsafe speed (fast or slow)

Subjective/Human Hazards - Sources of Judgment Errors

assumptions
attitude toward risk
carelessness
complacency
denial
distraction
erratic behavior under stress
fatigue
flexibility/resistance to change
goals, preconceptions
health status
ineffective supervision
lack of experience
lack of knowledge or skill
lack of respect for hazard
overconfidence
peer pressure
poor communication
poor conflict-resolution skills
poor decisions/ indecision
poor expedition behavior
poor leadership
seeking novelty out of routine
summit fever
tunnel vision
unaware of hazard
unrealistic schedule
unresolved discrepancies

How can this be used in the field?

I've done this presentation as a brief class early in a course. It gives people a vocabulary and a structure to evaluate and discuss hazards and risk. Give the model, tell a story of danger and disaster, and have the group analyze and identify the causes and contributing factors. If used in planning, briefing and debriefing of hikes, climbs, river crossings, open water crossings, rapids, etc., this can be a helpful tool and a good leadership habit. It can make us more effective at teaching risk management if, in addition to hard skills and experience, we give students a vocabulary to assess and explain what they have learned. As an example, lets look at these accounts of field incidents.

Lack of Respect for Hazard, Inappropriate Unroping On Glacier; Patagonia.

From the field safety report: After working on introductory crampon technique on dry ice at the side of a spur glacier I had my students rope up to travel up a snow covered glacier to a potential site to build top rope ice anchors. This area turned out to have many hazards so I decided to cruise up the glacier for a little glacier travel experience. I turned to brief the students when I noticed one student had unclipped from the rope and was 20-30 meters away from his rope team chasing a plastic bag across the glacier. My reaction, an angry one, was sufficient to stop him from chasing the bag and to return to his rope team. He was in an area without obvious cracks but only meters from an obviously crevassed area. As we left the glacier I found a hidden crack which I pointed out to the group. This group had a class on glaciology, glacier travel class and practice, self-arrest practice and reiteration by me before we stepped on the glacier. The student said he didn't know we were on the glacier despite being roped up for 15 minutes.

Unsafe Conditions: crevassed glacier
Unsafe Acts: unroping in technical terrain, failure to follow instructions
Subjective/Human/Judgment Errors: lack of respect for hazard, inexperience, carelessness

Fire, Inattention, Inappropriate Fire Starting Procedure; Absaroka Mountains, Wyoming.

From the field safety report: A student, Nick, was baking on a 111 hiker with a twiggy fire. It started to rain and the fire started to go out on the fry pan lid. Nick, normally a very together student, decided to pour white gas on the fire to keep it going. He opened the fuel bottle and started to pour it. As the flames spread toward the bottle Nick threw the bottle, spewing flaming across the ground igniting pine needles. Unfortunately another student was standing nearby. The gas hit her gaiter and ignited. She panicked and ran, but was quickly stopped by others and the flames promptly extinguished without injury. Nick said that another student had told him to use the gas.

Unsafe Conditions: open fuel bottle near stove (ignition source)
Unsafe Acts: improper procedure (pouring fuel onto fire, throwing flaming bottle), failure to follow instructions
Subjective/Human/Judgment Errors: carelessness, acting on mis-information

Transference from the Wilderness to the Office

We try to transfer the ethics and techniques of Leave No Trace from our field courses to our everyday lives. We also hope the leadership, expedition behavior and risk management our students learn become a part of their lives beyond their courses.

Unsafe Condition	Unsafe Act	Judgment Error Due to
wet roads	driving too fast	haste
intoxication	alcohol consumption	peer pressure to party
defective equipment	inadequate clothing	inadequate evaluation of gear

As a management example we could consider a scenario where management rewards a dramatic and risky activity and inadvertently conveys inappropriate expectations to staff. Folks, thinking they need to meet these expectations, emulate this activity on a course. The reward drives the program to places it should not be. To use a term coined by Jed Williamson as a common accident cause—we place ourselves in a bad position. All of a sudden someone is actually there; in a multiple capsize situation with a course; facing an emergency on a difficult mountain route; stuck in a deep cave on the dark side of nowhere; and they are in a hell of a fix.

Here is a list of human and environmental hazards that management must be wary of.

The Supervisor

- failure to make decisions
- inappropriate role model
- inattention to non-field safety concerns
- ineffective supervision, inadequate field contact
- ineffective communication of expectations
- inadequate evaluation and review of courses
- lack of an external perspective on safety
- no room for intuition
- no safety statement
- ineffective safety incident review
- inadequate briefing/debriefing
- lack of administrative experience
- lack of staff standards, hiring criteria
- lack of or inappropriate staff training

The Executive

- poor communicator
- unrealistic or inappropriate expectations
- inappropriate role model
- ineffective leadership
- inappropriate focus ("Someone else is responsible for safety, I'm the fund raiser")
- lack of definition of program goals
- lack of safety review and oversight
- ineffective governance body
- program grows through opportunity vs. intent

Support Staff

- overworked, ill trained
- acting in haste
- lack of care with equipment

Governance Bodies (Board of Trustees, public, outside agencies, law, land managers, etc.)

- lack of knowledge/understanding of program
- lack of safety philosophy or goals
- reactive intervention in program
- misinformed, misinforming

Admissions

- •inappropriate or ineffective medical screening
- •ineffective risk awareness
- •inaccurate pre-course information
- •inappropriate tone setting

Equipment

- •vehicles inappropriate for task
- •poor maintenance
- •poor documentation of maintenance
- •clothing inadequate in quality and quantity
- •shelters inadequate for conditions
- •food inadequate in quality and quantity
- •inappropriate use of equipment
- •housing inadequate, or poorly maintained
- •inadequate fire safety program
- •inadequate food services health program

Educational Practices

- •inappropriate training sequences
- •inadequate hazard identification and recognition
- •ineffective or inadequate emergency procedures
- •crisis communication procedures inadequate
- •crisis training inadequate
- •inadequate/restricting/inappropriate safety policies

Summary

Risk management can be boiled down to a simple methodology that makes both incident analysis and prevention easy to discuss. By looking at every actual or potential incident as a combination of human and environmental factors, we will have more effective discussions. By helping our students develop this methodology and vocabulary, we not only give them a lifelong skill, we help them develop personal responsibility and self-awareness, which are the very foundations of character and leadership.

SECTION 2: DATABASE PROFILES

Activity Profile

Participating programs submitted a demographics cover sheet which cataloged the activities conducted by the program, the number of staff and participants, and the corresponding number of activity hours per activity. The chart indicates the total number of program hours by activity. The 1989 and 1990 data was previously published in the *Adventure Program Risk Management Report, 1995 edition,* and is included here for comparison.

Table 1: Profile of total activity hours

	1989		*1990*		*1991-1997*	
Activity	*Hours*	*%*	*Hours*	*%*	*Hours*	*%*
Non-activity (sleeping/eating)	1,027,970	32.34	741,262	23.33	206,095	9.88
Initiatives team challenges	684,260	21.53	1,031,561	32.46	73,518	3.52
Backpacking	441,067	13.88	200,431	6.31	159,791	7.66
Classes (lecture, study)	289,570	9.11	193,050	6.07	0	0
Ropes course (high & low)	101,487	3.19	213,117	6.71	72,032	3.45
Camping (general)	123,550	3.89	131,817	4.15	197,501	9.47
Climbing (rock, ice, walls)	45,558	1.43	118,822	3.74	45,241	2.17
Boating (power, row)	141,366	4.45	2,992	0.09	0	0
Sports and recreational games	40,984	1.29	64,008	2.01	5,101	.24
Transportation (to activity)	38,917	1.22	59,980	1.89	43,249	2.07
Skiing (touring)	10,224	0.32	81,769	2.57	3,242	.16
Water (swim, wade, snorkel)	55,145	1.74	34,832	1.10	6,361	.30
Skiing (downhill/telemark)	36,147	1.14	40,679	1.28	772	.04
Canoe (flatwater)	2,248	0.07	73,099	2.30	124,656	5.97
Other	14,574	0.46	45,081	1.42	63,035	3.02
Hiking (day, orienteering)	27,730	0.87	26,188	0.82	7,982	.38
Work projects	22,000	0.69	25,613	0.81	47,229	2.26
Kayaking (ww and sea)	24,868	0.78	12,235	0.39	18,496	.89
Biking (touring)	21,258	0.67	8,365	0.26	2,160	.10
Sailing	2,271	0.07	21,494	0.68	16,800	.81
Canoeing (whitewater)	3,990	0.13	14,296	0.45	11,204	.54
Rafting	6,878	0.22	10,455	0.33	27,872	1.34
Biking (mountain)	6,702	0.21	8,065	0.25	750	.04
Cave	2,111	0.07	7,762	0.24	54	.00
Travel/study	5,208	0.16	4,352	0.14	891,672	42.73
Mountaineering	2,072	0.07	3,048	0.10	1,320	.06
SCUBA	0	0.00	1,920	0.06	0	0
Snow shoeing	0	0.00	1,528	0.05	0	0
Marathon					1,440	.07
Solo					56,208	2.69
Winter camping					2,760	.13
Total Hours	**3,178,155**		**3,177,821**		**2,086,541**	

In the 91-97 data set there have been inconsistencies in the level and quality of reporting. This shows most clearly in the Travel/Study category which accounts for 43% of the total. If more detail was available these hours would have been distributed to the specific

activities conducted rather than lumped together. Other than Travel/Study, the activities with the greatest representation are camping, backpacking and flatwater canoeing. Combined these activities represent 23% of the total hours. This result is clearly a reflection of the particular programming emphasis of the reporting programs. Non Activity represents 10% of the total. Comparisons to the 1989 and 1990 data indicate that the 1991-1997 data represents a different cross section of adventure programming organizations. Since submitting data is strictly on a voluntary basis there will be inconsistencies in each data set and variances in the types and number of hours represented in each report.

Injury/Illness Profile

There are 441 incidents in the 1991-1997 data set of which there are 182 injuries and 114 illnesses. These injuries and illnesses are listed by type and separated by participant and staff in table 2. It is interesting to note that athletic injuries is the second leading type of injury in the 1991-1997 data set whereas in 1989 and 1990 this type was far and away the leading type of injury. Of the athletic injuries in the 1991-1997 data set 49% were ankle injuries, 15% were knee injuries, and 11% were back injuries.

In the illness category, abdominal pain accounts for 15% and infection accounts for 11% of the total illnesses. The abdominal pain cases were primarily gastrointestinal disturbances with the most serious being a case of abdominal pain, which was later diagnosed as peritonitis. Infections included ear and eye infections and infected insect bites.

The one fatality reported was a drowning which occurred while surfing during non-program time.

Table 2: Injury/illness profile

	1989		1990		1991-1997	
INJURY TYPE	*Partic.*	*Staff*	*Partic.*	*Staff*	*Partic.*	*Staff*
Athletic (sprain/strain)	104	5	105	6	37	7
Soft tissue/bruise/contusion	42	3	34	3	62	11
Fracture	25	2	17	5	12	3
Other	14	0	17	7	2	0
Dislocation	7	1	5	1	4	0
Head w/o loss of consciousness	2	0	7	0	10	3
Burn	1	0	2	1	8	2
Head w/loss of consciousness					3	2
Dental					5	1
Blister					1	0
Eye Injury					3	0
Frostbite					1	0
Tendonitis					2	0
Infection					1	1
Near Drown / Submersion					1	0
TOTAL INJURY	**195**	**11**	**187**	**23**	**152**	**30**
ILLNESS TYPE						
Allergy	0	0	1	1	3	1
Fever (non specific)					7	0
Diarrhea					7	1
Infection					12	2
Abdominal pain					14	3
AMS					6	0
Flu symptoms					5	2
Heat exhaustion					2	2
Respiratory/not flu					6	0
Tick fever					3	3
Seizure					4	0
Diabetes					2	0
Hypothermia					4	1
chest pain					2	1
Urinary Tract Infection					3	0
Other *					15	3
TOTAL ILLNESS	**0**	**0**	**1**	**1**	**95**	**19**
Fatality	1	0	2	0	1	0
GRAND TOTAL	**195**	**11**	**188**	**24**	**248**	**49**

* The Other category for illness includes: 1 chicken pox, 1 head lice, 2 hyperventilation, 1 mononucleosis, 5 scabies, 1 sinus infection, 3 skin rash, 3 strep throat, and 1 tonsillitis. This includes staff and participants.

Primary Cause of Injury Profile

The primary cause identifies the most immediate action which led to the injury. Additional information on contributing causes has been reported, but is not included in this report. The primary cause of injuries in the 1991 - 1997 data set is consistent with the data from 1989 and 1990. Falls and slips are the predominate mechanism of injuries and

account for 38% of all injuries. This is consistent with the injury profile (table 2) which lists athletic and soft tissue as the predominant type of injury. Falls and slips accounted for 55% of athletic injuries and 46% of soft tissue injuries. Falls and slips are categorized as either on or off trail, on snow or rock and the surface conditions are either wet, dry, sloped, uneven, flat or snow/ice. The "other" category of causes in the 1991-1997 data set is significantly smaller than the data for 1989 and 1990 since a greater number of cause types are listed in the table and all 182 injuries are listed.

The causes used in this project are taken from the *Principal Causes of Accidents in Outdoor Pursuits , A matrix Developed and Revised by Dan Meyer and Jed Williamson.* Determining and assigning the immediate cause to an incident involves careful consideration of the events leading to the incident and contributing causes. Many causes are obvious and easy to identify, but it can be difficult to be completely objective in all cases. The accident equation developed by Hale and the Meyer/Williamson matrix are two useful tools to use when determining the immediate and contributory causes of an incident.

Analyzing the causes of incidents is an important and valuable process for managers to undertake. A simple evaluation of the data contained in this report indicates that there is a high degree of athleticism required for participation in adventure-based activities. For example; a participant may be able to walk down a city sidewalk without falling, but putting that individual on an uneven, sloping trail with a backpack will require attention by leaders to provide instruction on how to adapt a participant's walking to the new environment. The management and instructional staff of a program must be knowledgeable about the common injuries and illnesses encountered in their program and activities. This level of understanding leads to wise and informed management decisions that effect how the program or activities are conducted.

Table 3: Primary cause of injury profile

Primary Cause	1989	1990	1991-97
Fall/slip	80	73	69
Other	55	73	15
Unknown	23	25	2
Overuse	9	13	7
Previous history	12	9	9
Animal/insect	3	10	9
Carelessness	11	2	11
Poor technique	5	1	7
Failed to follow instructions	2	2	4
Rope system failure	4	0	0
Wet, slippery terrain	1	3	0
Altitude	3	0	0
Fatigue	1	1	0
Medications/drugs	0	2	0
Weather	0	2	2
Exceeded ability	2	0	5
Haste	1	0	1
Vehicle -accident/failure	1	0	1
Lack of fitness	0	1	2
Poor judgment/inexperience	0	1	4
Psychological	0	1	0
Supervision	0	1	0
Misbehavior			5
Equipment			2
Falling object not rockfall			4
Knife cut			8
Spilled hot water			5
Cold exposure			1
Totals	**213**	**220**	**182**

Injury Rates

The following table presents the rate of injuries which occurred during a given activity per one million hours of activity. The data for 1988-1990 is for participants only. The data for 1991- 1997 represents both participant and staff hours. There is great disparity in the rates between each data set which is directly related to inconsistencies in number and type of submissions received. The 1991 - 1997 data set represents 18 organizations with 2.1 million total hours (participant and staff), the 1990 data was from 39 programs with 3.1 million participant hours, 1989 data was from 30 programs with 3.1 million participant hours, and the 1988 data was from 50 programs with over 17 million participant hours. The voluntary nature of the reporting directly affects the reliability of the data and in particular the

incident rates.

The challenge in a project such as this is determining a rate that is relevant and meaningful. Lack of consistent reporting is one factor, but evaluating the data with a rate per million hours can also problematic. As stated in the 1995 report "30,000 participant hours is approximately equal to 10 participants, eight hours a day for an entire year." One million hours is roughly 10 participants eight hours a day for 34 years! In other words one million program hours represents a large program or a significant amount of program time. It may be difficult for managers, instructors and clients/students to relate to a rate expressed in this fashion. However, we will continue to use this measurement as it allows some comparison to previous data.

Table 4: Injury rates by activity

ACTIVITY	1988	1989	1990	1991-97	
Sports and recreational games	319	609.99	406.2	3332.68	*
Skiing (downhill)	87.5	359.64	196.66	0	*
Climbing (rock, ice, walls)	73	109.75	92.58	154.73	
Skiing (touring)	99.7	0	73.38	925.35	*
Initiatives and team challenges	6	77.46	53.32	136.02	
Backpacking	54.4	47.61	49.89	181.49	
Ropes course (high element)	5.5	78.83	32.85	111.06	
Water (swim, wade, snorkel)	n/a	18.13	86.13	943.25	*
Non-activity (sleeping, eating)	1.5	14.59	24.28	53.37	
Camping general	n/a	16.19	15.17	101.27	
Classes (lecture, study)	n/a	17.27	5.18	0	*
Canoeing (flatwater)	29		0	128.35	
Transportation (to activity)	n/a	0	0	69.37	
Other				63.46	
Hiking (day, orienteering)				1252.82	
Work projects				0	
Kayaking (whitewater and sea)				216.26	*
Biking (touring)				1388.89	*
Sailing				59.52	*
Canoeing (whitewater)				89.25	*
Solo				0	
Mountaineering				757.58	*
Rafting				71.76	*
TOTAL INJURY RATE S BY GROUPING					
Participant injury rate	10.01	62.93	60.42	98.16	
Staff injury rate	17.3	26.77	51.73	55.75	
Overall injury rate	10.8	58.73	60.41	87.23	

* Less than 30,000 activity hours were for this activity in the 1991 - 1997 data set.

While the injury illness profile and the injury cause profiles may seem more useful, rates, even as expressed in table 4, can have value if some extrapolation is done. Take the activity of rafting from the 1991-1997 data set for example. There were two injuries reported while rafting with 27,872 total program hours. The rafting injury rate of 71.76 injuries/million hrs. (2 injuries ÷ (27,872÷1,000,000)) means that there was one injury for every 13,935 program hours (1,000,000 ÷ 71.76). If we extrapolate further and divide 13,935 by 12 we get a rate of one injury for every 1,161 program days. (Based on a 12 hour day). This figure may be easier to comprehend by staff and clients. The organization that reported rafting activities averaged 5,574 rafting program hours per year between 1992 and 1996. If we divide 13,935 by 5,574 we would see that this organization has averaged 1 injury from rafting every 2.5 years (based on a 12 hour day) which is, in fact, the case.

Recording participation in numbers of hours probably provides the most flexibility to represent the rates of injury as per the example above. Some programs may conduct an activity for a couple hours at a time while others may conduct activities for much longer periods. Collecting participation in hours will allow us to reflect these differences.

Calculating injury rates can be a useful tool for individual programs if they determine a rate that is meaningful to management and field staff and are consistent in collecting the data. The National Outdoor Leadership School has been calculating rates per 1000 program days since 1983 and has published and shared this with the industry. This has provided NOLS a consist method of evaluating different information based on participation on a NOLS course. It is our hope that the Adventure Programming Incident Reporting Project will provide some level of consistent analysis for contributing programs and organizations.

SECTION 3: NARRATIVES

NEAR MISS INCIDENTS

Near miss incidents, or close calls, can be defined as: A potentially dangerous situation were safety was compromised but did not result in an injury. A near miss is a type of accident in that it is an unplanned and unforeseen event. While there is subjectivity as to exactly what may be considered a near miss, any interpretation should rule out situations such as routine toprope falls, failure to roll a kayak for a beginning student, or a fall on the trail with no injury. One way to differentiate these true near misses from less significant incidents is if those people involved express relief when the incident ends without harm. Program management may also desire to give careful consideration to what is an near miss for that program and establish specific expectations for reporting. Some examples of specific near miss thresholds may include the following:

- any situation where someone becomes lost or disoriented either traveling or in camp
- a bear in camp, or any close or aggressive encounter with a bear, lion, wolf, rattlesnake or person
- an anchor or rope system that does not operate as planned This includes improper belay technique, improper clip-ins or incorrect harness buckles or tie-in's
- an unplanned or unanticipated swim while river crossing Simple stumbles caught without incident by the crossing party are excluded

This is an example of a near miss as reported for inclusion in the database.

> An instructor and the last two students were about to leave the safe zone after rappelling when a large chunk of rock came off from the bottom of the overhang from a height of about 20 meters. This chunk of rock landed about 15 meters beyond the safe zone. There were no injuries.

Rockfall is a common type of near miss and often clearly fits that part of the definition as unplanned or unforeseen. In this case a safe zone had been established at the base of the climb in anticipation of rockfall and the rockfall occurred outside the safe zone, they seem to be managing the risk well. However, when the group was about to depart and leave

the safe zone, and probably when their awareness for rockfall had been relaxed, is when the accident occurred. They say "timing is everything" and in this case it seems to be quite true.

Near miss incidents are valuable as predictors of future accidents. They are as important as other safety data and should be reported and analyzed on a regular basis. By collecting near miss reports and looking for trends a program can better anticipate and plan staff training needs or make necessary programmatic changes as the following examples illustrate.

1. The group was lining canoes through a rock garden when a participant slipped allowing the stern of the canoe to swing out and broach on a rock. The canoe filled with water, but all of the equipment was safely recovered. The canoe was retrieved by doing a Z-line rescue. There was no visible damage to the canoe.

2. The group was lining canoes around a rapid. Participants just finished lining the second canoe and were preparing to climb back in when the current caught the canoe and spun it around. The participants were unable to control the situation and the canoe filled with water.

3. The group was lining canoes through a rapid when the lead canoe became broadside and began to fill with water. The group was unable to regain control of the canoe and dropped the lines. The canoe immediately dumped and the gear and the canoe floated downstream. The group was close together so they were able to plan and act quickly. The canoe and all the gear was retrieved, though the canoe sustained some damage it was still usable.

4. We were walking boats through a rapid late in the day. It was sunny and we all felt comfortable with this. As we were guiding the canoe around a rock, the stern caught the current. One student held onto the canoe and then let go when she was in the middle of the strong current. She was swept downstream and caught in an eddy. She was pulled out with a throw rope.

The program's analysis stated: "Lining seems to be an area where there have been several close calls. It is an area to focus on when training leaders. ...it is clear this is a area of weakness."

The value of recording near miss incidents is clear. This program has been able to identify and address a problem area in their program.

An important aspect to using and analyzing near miss incidents is creating an atmosphere in the program where these incidents can be discussed openly and objectively without fear of repercussion. In the 1995 report we discussed how the false bravado that can accompany these types of incidents can hinder the program's ability to have them reported or interfere with analysis, so to can an atmosphere that inhibits honest reporting. An organizational culture that supports the reporting of near miss incidents so other staff can learn from the experience and management can be fully aware of risk management concerns is an important foundation to successful risk management.

The reporting of near miss incidents can be accomplished on the same form used when reporting other incidents. The Wilderness Risk Managers Incident Report form allows for this. The causes of near miss incidents are usually the same as the causes for incidents that result in injury.

INTRODUCTION TO THE NARRATIVES

Perhaps one of the most valuable aspects of gathering incident data is that it provides the ability to share the narratives of each incident with staff and colleagues. In this way the experience of some is available to many others. While nothing can fully substitute for the value of first hand experience, learning from incident reports should be encouraged in adventure-based programs.

The narratives included in this book have been taken directly from the Adventure Programming Incident Reporting Project database. The Narratives have been edited by Wilderness Risk Managers Committee members for clarity and to correct punctuation and spelling errors. Also remember these are primarily field reports intended as internal documentation for the contributing organization and not always written under the best of circumstances. In many cases the level of information available is less than complete and additional analysis may be warranted. We will leave this to the reader ponder. We have made every effort to make the narratives anonymous.

The cause or causes are listed when known. These causes are from the list on the Wilderness Risk Managers Incident Report form. It must be remembered that these incidents are published out of context and in many cases significant details are not included such as group dynamics and personality, teaching progressions, or other events leading up to the incident.

We have included the analysis from the individual programs when available. We also added comments by Wilderness Risk Managers Committee members where we felt it necessary or beneficial. These comments are intended to point out examples of good and poor reporting, good and poor analysis, and add to the educational value of the narratives. The WRMC comments will occasionally disagree with the program's analysis. They also provide background comments and supporting observations on the incident and documentation. For some incidents there is no analysis given.

The narratives are primarily arranged by activity at the time of the incident, but where it seemed more logical they are grouped by type or cause of injury or illness.

CAMPING

Live Tree Falls on Tent Occupant
CAUSE: Weather
CONTRIBUTING CAUSE: none
ACTIVITY: Camping
NARRATIVE: A 22 year old female staff member was in her tent with two others during a storm with "tornado like" winds. A live tree, two feet in diameter, snapped six feet up from its base, traveled 27 feet through the air and landed on the tent. The female staff member was struck by the tree and suffered a head injury with loss of consciousness. She was evacuated on a backboard by helicopter with the other two tent mates. All three were examined by a physician and cleared for spinal fractures. They were given pain killers and prescribed rest.

PROGRAM ANALYSIS: This storm knocked down and uprooted large, healthy trees all over the forest. The group had done a good job selecting tent sites away from dead trees and snags.

Cooking Incidents

WMRC COMMENTS: *Cooking accidents are common in wilderness based adventure programming. Injuries include burns from stoves and spilled hot water and other soft tissue injuries from knife cuts. These types accidents can be minimized if attention is paid to kitchen locations, supervision of behavior around stoves and fires and using creative strategies for decreasing the accident potential. Using a stove under a tarp or in a tent is not a recommended practice, crowding people*

around a stove increases the chance someone may be hurt. Carelessness, inattention, rough-housing near the stove or a poorly balanced stove are frequent contributing causes to cooking and kitchen accidents. The use of stout pot grips or ladles are the best suggestion handling pots of boiling hot water.

Spilled Hot Water While Cooking
CAUSE: Spilled hot water
CONTRIBUTING CAUSE: Poor position
ACTIVITY: Cooking
NARRATIVE: A pot of boiling water and pasta fell off of a camp stove and onto a female student's feet. It was raining and we were in close quarters under a tarp for shelter. The ground was uneven tundra and the stove tipped over. We immediately poured two to three gallons of cold water over her feet. We then removed her shoes and socks and slowly poured another four to six gallons of water over her feet. Both ankles were burned (second degree). The right ankle was burned on the inside of her foot. Her left foot had two smaller burns on the top of her feet near the base of her toes. We applied Bacitracin® (antibiotic ointment) and sterile dressings and gave pain killers. We changed the dressings and cleaned the wounds every twenty-four hours. After four days we pierced and drained the blisters with a sterile needle and began to hike slowly to town about six miles away. The student wore her running shoes and carried a very light pack. The next day the student saw a doctor. There was no infection.
PROGRAM ANALYSIS: Keep people's feet clear of stoves and make sure stoves are steady and protected from the wind. If a spill does occur, remove shoes and socks immediately so hot water cannot pool. Apply cold water immediately. Clean wounds often and monitor for infection.

Rough Housing in Cooking Area Results in Burn
CAUSE: Carelessness
CONTRIBUTING CAUSE: Supervision
ACTIVITY: Cooking
NARRATIVE: Some rough-housing and pushing occurred near the fire while cooking. A male student was pushed and stumbled backwards, falling and landing with his elbow in a pot that still contained near-boiling water. The water fell onto his back. As treatment his whole body was submerged in water until he got too cold. He was then moved to the tent and cold wet towels were put on his elbow and back. The burns were cleaned, treated with Bacitracin® and dressed. He was evacuated for medical care. He had first and second degree burns on his elbow and back .
PROGRAM ANALYSIS: Stop horseplay around fires, hot water and in the kitchen.

Lighting Stove in Tent Results in Fire
CAUSE: Failed to follow instructions
CONTRIBUTING CAUSE: Inexperience
ACTIVITY: Cooking
NARRATIVE: A student decided to light the stove in the vestibule of the tent. The burner was still hot and some of the fuel had spilled. As soon as the student lit the match, the tent caught fire. They put out the tent fire.
PROGRAM ANALYSIS: The student did not heed the safety instructions taught by the instructors.

Animal/Insect

WMRC COMMENTS: *Venturing into wild country means sharing habitat with the animals that live there. Knowledge and understanding of the habits of the indigenous animals is useful in minimizing the risks associated with an encounter from a potentially dangerous animal. Often, being prepared to relocate a campsite once an animal is encountered may be the best practice for both program participants and the animal.*

Bear in Camp
CAUSE: Carelessness, improper food storage
CONTRIBUTING CAUSE: Lack of attention
ACTIVITY: In camp
NARRATIVE: A bear took three breakfasts and some cheese from a food pack while no one was looking. The group packed up and moved campsites.
PROGRAM ANALYSIS: None

Bear in Camp
CAUSE: Technique, improper food storage
CONTRIBUTING CAUSE: Poor camp location
ACTIVITY: In camp
NARRATIVE: A bear was rattling around the food and backpacks. As a counselor approached, the bear growled and ran a few steps towards him. A rock was thrown and it hit the bear in the behind. The bear ran away. One canteen was bitten into and the garbage was ripped open. There was no other damage to the food or the packs.
PROGRAM ANALYSIS: Keep a clean camp and hang food. Don't camp in a site with lots of blueberries.

WRMC COMMENT: *Any Bear encounter can be life threatening. For the safety of both the bear and the human, meticulous bear camping practices should be followed in bear habitat. A bear habituated to humans becomes less fearful of people and as time goes on and more prone to seek human campsites. The animal not only becomes more dangerous to people but as a "problem bear," it may need to be destroyed. Different precautions may apply depending if you are in grizzly, black or polar bear habitat. Consult with local authorities before your trip.*

Rattlesnake Wouldn't Leave Camp
CAUSE: Animal/Insect
CONTRIBUTING CAUSE: Poor camp location
ACTIVITY: In camp
NARRATIVE: At approximately 7:00 p.m. a participant saw a rattlesnake within three feet of our campsite. It watched us watch it for about ten minutes, then it slithered away. Around 9:00 p.m. with the students under their tarp, the trip leader went over to check the log where the snake had been and found that it was back. The snake was approximately three feet from the leader's tarp. The leaders decided to kill the snake and hide it in the woods. The leaders decided not to tell the students that it had returned and that it had been killed.
PROGRAM ANALYSIS: We decided to play it safe and kill the snake even though we didn't want to. We decided the students would be better off not knowing about the incident.

CLIMBING INCIDENTS

WRMC COMMENTS: *There were 45,241 hours of rock climbing activity reported which accounts for 2.17% of the total hours in the 1991-1997 data set. There were 16 incidents while climbing with five injuries. Climbing related incidents are often a result of the complexity and technical nature of climbing systems, inattention on the part of novice climbers or lack of supervision by leaders. Expectations for student performance should be clear and teaching progressions should be logical. Careful assessment of student abilities must be done before assigning responsibilities. Participants and staff should be in the habit of checking each other with ritual system checks such as: "helmet, harness, buckle backed, figure eight to harness, good to go."*

Belay Rope Becomes Unclipped While Down Climbing
CAUSE: Technique
CONTRIBUTING CAUSE: Supervision
ACTIVITY: Backpacking, Canyoneering
NARRATIVE: The participant who was selected to tie in the other participants at the ledge knew the bowline on a coil and the figure-eight on a bight and had tied in many participants during the other climbing activities. She tied in the first participant who, while down climbing had her carabiner open up and the belay rope with a figure-eight on a bight came free. She yelled that her carabiner was open and the (belay) rope was out. The other participant, the one who tied her in, yelled to her that she was safe because the rope was still around her waist. This appeared to partially reassure the participant, and her voice calmed down. The instructor at the bottom of the rappel became directive and took control of coaching and encouraging the participant. The student was told to take off her pack and drop it to the ground so she could descend easier. She also had the participant put the figure-eight back in her carabiner and make sure it was locked.
PROGRAM ANALYSIS: Many important lessons can be learned from this incident:
1) Instructors should be tying in the participants or double checking every one of them since safety is their ultimate responsibility.
2) Why was the student clipped into the rope? The student should have been tied into the rope with a figure-eight follow through, not a figure-eight on a bight clipped into a carabiner. This added an unnecessary link into the system and increases the chance of a problem occurring, as shown in this case. Several ropes courses clip people in an out for ease, but this is not appropriate in a backcountry climbing situation.
3) If it was hard for students to descend with packs on, why weren't the packs lowered by rope?
WMRC COMMENTS: *The program management may decide that instructors need to be the ones to tie students into belays and rappels, but it is also common to have participants tie each other in and belay. If this is a goal or outcome of the program it must be supported with a clear consistent progression of instruction, supervision and observed competence.*

Student Belayer Unclips the Belay Rope From Anchor
CAUSE: Failed to follow instructions
CONTRIBUTING CAUSE: Inexperience
ACTIVITY: Rock climbing
NARRATIVE: The student was belaying and lowering another student who was having difficulties leaning back. The instructor monitoring the climb moved forward to supervise the climber and during this time

the belayer unclipped the belay. The instructor at the top observed this and re-clipped the rope.
PROGRAM ANALYSIS: The climber was on a ledge five feet from the ground at the time. Instructors must watch and supervise belayers at all times. Should they need to focus on the climber, they must communicate with another instructor to have them watch and supervise the belayer.

Incorrect Climbing Signals Result in a Student Being Taken Off Belay
CAUSE: Communication
CONTRIBUTING CAUSE: Failed to follow instructions
ACTIVITY: Rock climbing
NARRATIVE: An instructor was belaying a student during a down climb. The instructor was at the top of the climb. The ground instructor noticed that there seemed to be too much slack in the rope and shouted to the top instructor "Up rope." The top instructor then mistakenly took the student off the belay while the student was still climbing. The student was off belay for about sixty seconds before the ground instructor understood what was occurring and yelled up to the belayer, at which time the student was put immediately back on belay.
PROGRAM ANALYSIS: After the incident, the instructors decided to use different commands for the two specific events. This incident occurred primarily because of confusion concerning the use of the command "up rope." The top belayer heard the bottom instructor shout "up rope," a term which they had been also using to tell the belayer to haul the unweighted rope back to the top of the climb. Even more importantly, the belayer took the climber "off belay" without hearing the "off belay" command.
For all future programming, the command for taking up slack in a belay rope is "up rope," and the command for pulling an unweighted belay rope back to the top is "take it up." Education of staff in the use of these commands was recommended.
WMRC COMMENTS: *The standard commands in this kind of situation is for the down climber or rappeller to say, "Off belay, clear" so the top people know 1) the climber is down, 2) the climber has untied so the belayer can haul the rope up.*

Inexperienced Belayer Fails to Hold Fall
CAUSE: Inexperience
CONTRIBUTING CAUSE: None identified
ACTIVITY: Ice Climbing
NARRATIVE: An 18 year old male participant was climbing, approximately twenty feet up the ice route when he fell. His belayer did not properly hold the fall and let the participant crater (hit the ground). While falling he spun backwards, pressing the rope to the cliff face and causing damage to the rope. The participant was not hurt.

PROGRAM ANALYSIS: The belayer is a trained ropes course facilitator and therefore it was assumed he was skilled in belaying. He was out of his element ice climbing and should have had better supervision.

Rappelling

Staff Member Slipped and Hit Knee While Rappelling With Pack
CAUSE: Fall/slip
CONTRIBUTING CAUSE: Haste
ACTIVITY: Rappelling, Canyoneering
NARRATIVE: A staff member suffered an inch long, half inch wide abrasion below his right patella when he slammed into a rock during a rappel in a canyon. He was the first person to rappel that day. He was wearing a backpack which weighted him down uncomfortably and also made him want to hurry to get to the ground. He was not wearing a chest harness and his boots slipped as he lowered himself down the boulder and slammed forward into the rock. He continued to rappel to the ground and requested the first aid kit be sent down. Another participant helped him with first aid and there were no complications.
PROGRAM ANALYSIS: The staff member may not have slipped or hurt his knee if he had been wearing a chest harness. He rappelled several times previously during the course with a backpack and a chest harness and did not slip. The packs could have been lowered and then it would have been easier to rappel.
WMRC COMMENTS: *A chest harness would not be normal equipment for this activity. Rappelling without the pack would have been more prudent. Haste and possibly the desire to stick to a schedule were factors in this incident.*

Inexperience and Improper Rappel Technique Results in Burns to the Hand
CAUSE: Technique
CONTRIBUTING CAUSE: Supervision
ACTIVITY: Rappelling
NARRATIVE: The student, an 18 year old woman, was standing up on a ledge with slack in both the rappel and belay ropes. As she leaned back to rappel, the rappel rope slipped through her right hand. She then grabbed the rappel rope with her left hand above the descender. With the weight of her and the fall, the rope slipped and burned her hands. The fall was 2.5 meters. The belay rope did catch. She had two open wounds, blistered fingers, and a blistered palm, all on the left hand. The right hand had blisters on four fingers.
PROGRAM ANALYSIS: The belay rope should have been tighter and

communication could have been better. The rappel rope could have also been held by the bottom instructor who could have done a fireman's belay.

Improper Technique on a Rappel Results in Participant Turning Upside Down
CAUSE: Instruction
CONTRIBUTING CAUSE: Technique
ACTIVITY: Rappelling
NARRATIVE: A student was rappelling and a staff member was belaying her. The student was nervous and the instructor reassured and coached her. While leaning out before descending she leaned farther than she needed to and went over backwards, head first. All the ropes held. With the help of the program coordinator she was advised to turn around so her feet came first. She completed the instructions and continued the rappel.
PROGRAM ANALYSIS: It would help to continue reassuring nervous students even after they seem to be ready.
WMRC COMMENTS: *It appears from the narrative the belay rope had too much slack. If the belay rope is tight, participants will not have enough rope to topple over backwards.*

Artificial Wall Climbing

Improper Belay
CAUSE: Position
CONTRIBUTING CAUSE: Inadequate belay anchoring system
ACTIVITY: Climbing
NARRATIVE: An instructor was belaying a client heavier than herself. When the client was ready to come off the wall, the client began to cry and panic. The anchor person for the climber left the belayer to offer emotional support to the friend. After the anchor person left, the instructor was pulled towards the wall and found it difficult to lower the client. The instructor was not lifted off the ground. The instructor immediately instructed an adult parent to get behind and anchor him. After the individual was lowered from the wall, an instructor offered the person emotional support.
PROGRAM ANALYSIS: The group was very supportive of the individual who had panicked. The person recovered quickly and rejoined the group on the next belay. The instructor had not made it clear to the anchor person that he was not to let go of his position. The instructor should have gotten an adult anchor to begin with.
WMRC COMMENTS: *The main factor in this incident was the position of the belayer to the anchor. The angle of the rope from the climber to*

the top anchor to the belayer determines how the force of a fall will be felt by the belayer. A greater angle (combined with the lack of a proper bottom anchor) will result in the force of the fall pulling the belayer to the wall. If the belayer were directly under the top anchor the force would not usually be enough to pull the belayer off the ground. While adding additional weight to the belayer in the form of another person makes some sense having the belayer tie into a proper bottom anchor fastened to the floor would be better.

BACKPACKING/HIKING INCIDENTS

WRMC COMMENTS: *Backpacking and hiking activities totaled 167,773 hours or 8% of the total hours reported in the 1991-1997 data set. There were 89 incidents reported during backpacking and hiking activities with 39 injuries. Of the 39 injuries 23 (59%) were caused by falls and slips. As illustrated in table three, falls and slips are the main cause of injuries in adventure programming.*

Fractured Wrist From Fall on Trail
CAUSE: Fall/slip
CONTRIBUTING CAUSE: Wet slippery terrain
ACTIVITY: Backpacking
NARRATIVE: A 15 year old female student was hiking on a sloped trail. It was muddy. She slipped and stopped her fall with her hands. Her right wrist became swollen after the fall. A fracture was suspected and an immediate evacuation by vehicle was done. Apart from the swelling she had a lot of pain. Circulation seemed fine. The wrist was immobilized with bandages. She was taken to the doctor where X-rays were taken and the wrist set in plaster.
PROGRAM ANALYSIS: Students need proper foot wear.
WMRC COMMENTS: *The narrative doesn't indicate that improper footwear was used, but we agree that equipment should match conditions.*

Participant is Swept Downstream During a River Crossing
CAUSE: Fast water
CONTRIBUTING CAUSE: Technique
ACTIVITY: River crossing
NARRATIVE: The group was crossing the river, three people at a time. An 18 year old female fell and was swept downstream. She immediately dropped her pack and it floated out of sight. The rest of the group crossed safely and the counselors ran to find the camper. After

two minutes a counselor spotted her climbing out of the river. She was okay, was given dry clothes and her pack was recovered. The group debriefed the experience. They had previously discussed self rescue and safety techniques in river crossings (drop pack, float with feet up and in front, make your way to shore).
PROGRAM ANALYSIS: A different spot with a weaker current might have been better. It is important to spend as much time as is needed to search for appropriate river crossings.
WMRC COMMENTS: *It is difficult to analyze this incident more thoroughly without additional information such as: depth of the water, approximate speed of the current, bottom composition, water and air temperature, crossing method, description of the entry and exit points and configuration of the river. We are concerned that it took two minutes to locate the participant after falling. This would indicate there were no spotters stationed strategically downstream to assist or keep watch on someone should they fall.*

Fall on Trail While Hiking Downhill
CAUSE: Fall/slip on trail
CONTRIBUTING CAUSE: Fatigue
ACTIVITY: Backpacking
NARRATIVE: It was fairly late in the day and the group was descending a "moderate" slope (around 30 degrees). A 16 year old male participant slipped and fell. The counselor was in front of him and did not see the fall. According to the participant and other group members, he fell forward and rolled sideways as the weight of his pack shifted. He first hit his left jaw on a rock and then his right temple. He recalled "fading out for a split second but wasn't sure." He was okay after a primary and secondary survey, but they decided to monitor him for the next 36 hours. He was able to walk unassisted to the campsite. During the next 48 hours his condition was monitored until he said he was one hundred percent again.
PROGRAM ANALYSIS: The time of day was the biggest contributing factor.
WMRC COMMENTS: *Many accidents in adventure programs occur late in the day.*

A Student Group Becomes Separated from Instructors for Twenty-Two Hours
CAUSE: Supervision
CONTRIBUTING CAUSE: Instruction
ACTIVITY: Backpacking
NARRATIVE: There were two groups, each supervised by an instructor. Although the groups were repeatedly instructed to hike together, people became separated for a period of twenty-two hours. While

searching for water for breakfast one group of seven students hiked ahead unbeknownst to the other five students and the two instructors in back. This first group of students didn't have a first aid kit or anyone in it with first aid training.
PROGRAM ANALYSIS: The instructor reporting the incident thought that this was not a big deal. The instructors were unable to establish telephone communications with the program coordinator at the base headquarters, trying both the office number and the cellular phone number. We suggest looking into a radio communication system, as there appears to be adequate repeaters throughout the area.
WMRC COMMENTS: *This is an interesting incident, but the report doesn't provide much additional information. It would be useful to know how the students were located and more detail as to how the incident was handled. Though people were instructed to hike together; were they taught what to do if lost?*

The comment that the instructor thought this "was not a big deal" is a red flag that should be addressed by the program. An effective communication system can be useful in a situation like this, but may also become a crutch leading to complacency. Communication systems are still less than 100% reliable and do not replace effective field practices.

Hunter Aims Rifle at Student Group
CAUSE: Other, cultural difference
ACTIVITY: Backpacking
NARRATIVE: As we were hiking along a well used trail I noticed the students stop. I looked up to see a hunter with his rifle pointed at us. I made eye contact with him and told him we were hiking through, and we continued to hike when he lowered his rifle. Our camp dog started barking at him and the hunter pointed his rifle saying that he was going to shoot him if he tried to bite him. We filed past him. We continued with no problems.
PROGRAM ANALYSIS: We were in an area where hunters were out during peak season. We wear orange hats and vests but cannot control what type of hunters with guns we may encounter. In any case, during hunting season we must do our best to stay out of areas that are heavily used, being especially alert when we are in those areas. Staying low key and not inciting confrontation is the most conservative approach.
WMRC COMMENTS: *The culture of hunters is usually very different from that of hikers. The program analysis is good.*

Slips/Falls on Snow

WRMC COMMENTS: *While there were only seven incidents caused by falls or slips on snow it should be noted that these types of falls are one of the more frequent causes of injury and fatality reported in Accidents in North American Mountaineering. Experience in assessing slope steepness, fall line and snow conditions is necessary when choosing a slope to descend. Common mechanisms of injury include striking rocks hidden just under the surface, rocks thought to be out of their path, sinking feet into soft snow (fracturing or spraining ankles), tumbling out of control, failing to stop and hitting scree or rocks at the bottom, and cutting or bruising ones self with ice ax or ski poles.*

Soft Tissue Injuries Sustained from Falling Down a Snow Slope
CAUSE: Fall/slip on snow
CONTRIBUTING CAUSE: Exceeded ability, inadequate equipment, poor position
ACTIVITY: Backpacking
NARRATIVE: The group approached the top of the snow field and prepared to descend. They had crossed, descended and climbed snow fields previously on the trip. One student descended the slope safely with his pack and the instructor followed. Two others descended with no problem. The third student, a 16 year old male, began descending facing down slope with his two ski poles in his hands. He then slipped and was unable to arrest his fall. He slid on his rear feet first twenty feet to the rocks below. He bruised his buttocks and scraped the knuckles on his left hand. Another student slipped, but the instructor was able to stop him before he reached the talus. The fifth student lowered his pack and came down with no problem. The student who fell was okay but shaken. He was able to walk and hike in twenty minutes.
PROGRAM ANALYSIS: The slope was probably beyond the limits of the one student. Our assessment of the slope was not as thorough as it should have been. We should have looked more carefully at the slope angle, the density of the snow and the runout at the bottom. The student who fell should have held both poles in one hand while descending. It was apparent that we should have traversed above the slope, off trail, to a safer descent.

Neck Injury From Glissading
CAUSE: Unsafe speed
CONTRIBUTING CAUSE: Technique
ACTIVITY: Backpacking
NARRATIVE: While glissading down a snow field, a female instructor hit a depression which caused her to flip and land on her neck. She felt

okay afterward, but the next day the left side of her neck began to hurt. It was decided to have the group hike out. The instructor went to a hospital. X-rays were taken and she was diagnosed with a left Trapezius muscle strain and prescribed ibuprofen and ice.
PROGRAM ANALYSIS: None

Sliding Off a Snow Field and onto a Rock
CAUSE: Unable to control descent
CONTRIBUTING CAUSE: Exceeded ability, poor route selection
ACTIVITY: Backpacking
NARRATIVE: A hiking group encountered another group that was sliding on a patch of snow. The first group decided to join in the fun. They climbed up to a snow patch and surveyed the scene. Upon looking down slope, they saw a rock protruding from the left side and a clear path on the right side. As the counselor slid down, he slid towards the left and slid across the rock. After he stopped the slide he checked himself out, and other than some minor abrasions, felt fine.
PROGRAM ANALYSIS: The counselor showed poor judgment in the area chosen for a snow slide. It could have led to a more serious injury.

CANOEING INCIDENTS

WRMC COMMENTS: *Canoeing (flatwater, including portaging, and whitewater) totaled 135,860 activity hours or 6.5% of the total hours. There were 44 incidents reported with 17 injuries of which 14 occurred during a portage. Twenty one (48%) of the incidents were near misses.*

Fall During Portage
CAUSE: Fall/slip on trail
CONTRIBUTING CAUSE: Fatigue
ACTIVITY: Portage
NARRATIVE: A 16 year old male participant fell, hitting his head on a rock while carrying a food pack during a portage. He got up, left his pack and walked, unassisted to the end of the portage, to get a counselor. When the counselor arrived the patient had a large contusion on his head. The patient said he felt fine but had a headache. It was reported that the patient had passed two other participants while walking to the counselor, but had no memory of this. The counselor decided the patient had a concussion. No other symptoms were observed and noted other than pronounced contusion and brief memory loss. The group camped for 24 hours to monitor the patients condition. Ibuprofen was given for his headache, and the pain disappeared. The

patient was not evacuated and the group continued on after the 24 hour layover.
PROGRAM ANALYSIS: Based on the incident description, the counselor's supervisor felt that the counselor did not appear to have a thorough knowledge of signs and symptoms of head injuries. No indication of pupil equivalency or reaction to light was given. It was recommended that the counselor review Wilderness First Responder information.
WMRC COMMENTS: *This is a situation where a written medical protocol can help field staff make a decision on whether the patient needs to be evacuated and with what degree of urgency. Programs can use a physician medical advisor to develop protocols, or refer to the Wilderness Medical Society Practice Guidelines for guidance.*

Canoe Broached on Rock
CAUSE: Failed to follow instructions
CONTRIBUTING CAUSE: None identified
ACTIVITY: Canoeing (whitewater)
NARRATIVE: During early afternoon, the group approached fast moving water. The counselor could see the entire rapid from her canoe and chose not to scout from land. The counselor directed the second and third canoes to wait in an eddy while she, along with a participant, paddled the rapid. The counselor would use paddle signals to direct the other canoes when to proceed. Before the counselor could give the go ahead signal one of the canoes had already come out of the eddy. The counselor then signaled for it to go ahead. This canoe hit a rock and became broached in the rapid. The water was knee deep so the participants were able to get out of the canoe. The canoe filled with water and remained stuck despite trying to do a Z-line to pull it out. The group hiked back upstream to a spot where they had seen a canoe stashed in the woods. They used that canoe until they could get to a phone to call camp and get a new canoe.
PROGRAM ANALYSIS: The counselor felt that the students attitude toward whitewater had become less cautious as time had gone on, with this incident taking place in the middle of the trip. The counselor took more time with scouting whitewater during the second half of the trip.
WMRC COMMENTS: *By not scouting the rapid from land the counselor may have become complacent, a tendency we all must guard against.*

Participant Canoe Maneuvered Incorrectly and Capsized
CAUSE: Not following instructions
CONTRIBUTING CAUSE: Complacency
ACTIVITY: Canoeing (whitewater)
NARRATIVE: It was day 33 of 45. The group camped above the last rapid of the river. Numerous rapids had been run on this river. There

were six people in three boats. The day was cold and windy with misty sheets of intermittent rain. We decided to run the rapid as it was within our ability and comfort level. We would run it one boat at a time, as usual.

The first canoe ran the rapid without incident. The second canoe ran the first part of the rapid, but as they continued, they deviated from the intended line and missed making a critical move. They ended up broadside to some large standing waves and their boat quickly filled with water. They exited the canoe upstream of it and swam to shore.

Meanwhile, one camper and I witnessed the incident and we quickly unloaded our boat and ferried over. The two remaining students provided dry clothes to change into. The two wet students walked downstream along the river bank to stay warm while the rest of the group retrieved gear and brought the third boat through the rapid. No one became hypothermic.

PROGRAM ANALYSIS: Although we had discussed the importance of not letting our guard down, it was clear that the group's attitude had contributed to this incident. I emphasized very clearly that such an incident was entirely preventable and that we could ill afford to have it happen again. The rapid could easily have been broken down into sections, allowing other boats to follow the demonstrated route more directly. Whenever possible, shoot rapids in discrete sections and do not let your guard down.

Participant Dragged by the Canoe While Getting Back in
CAUSE: Technique
CONTRIBUTING CAUSE: Inexperience
ACTIVITY: Canoeing
NARRATIVE: Three boaters were negotiating a shallow, rocky part of the river which required them to get out of the boat and push. As soon as they were clear they all got back in. One student failed to jump in at the right time and hung on to the boat and was dragged. As a result she knocked her right knee on the rocks. The knee became bruised and swollen. Cold compresses and an ace bandage were applied. She felt better the next day.
PROGRAM ANALYSIS: The incident could have been avoided through constantly reminding the students of safety issues and reminding them to make good judgment decisions during the river trip.
WMRC COMMENTS: *For the previous three incidents: Leaders should always be aware of and anticipate the possibility that some students might not follow instructions or perform as expected.*

Lightning Strike Near Canoeists
CAUSE: Lightning
CONTRIBUTING CAUSE: Weather, unable to predict potential for lightning
ACTIVITY: Portage
NARRATIVE: The group was unloading canoes and preparing to portage when three participants were shocked while in the water from a lightning strike 1-2 kilometers upstream. A storm had been approaching and it started raining as the group pulled up to the portage. There had not been significant lightning or thunder nearby prior to the incident. The shock made all of their legs jerk and feel slightly numb. The numbness lasted for about thirty minutes.
PROGRAM ANALYSIS: The group should have tried to get off the water earlier if possible but it sounds like the lightning had just begun. Nonetheless, they shouldn't have been in the water with lightning striking one to two kilometers away.

Participant Receives Multiple Bee Stings on Face
CAUSE: Animal/insect
CONTRIBUTING CAUSE: None identified
ACTIVITY: Portage
NARRATIVE: While portaging, a participant accidentally hit an overhanging branch with his paddle. There was a beehive on the branch. A counselor and a female camper were stung multiple times on the face. The counselor and camper each took 50 mg of Benedryl®. Pain and swelling were reduced. No other medications were necessary.
PROGRAM ANALYSIS: None
WMRC COMMENTS: *Promptly taking Benedryl® or other antihistamine, to ward off an allergic reaction was appropriate.*

A Loaded Canoe Swamps
CAUSE: Technique
CONTRIBUTING CAUSE: Judgment
ACTIVITY: Canoeing (flatwater)
NARRATIVE: A counselor and two students were taking on water due to uneven weight distribution in the boat. They were paddling on a large lake from island to island and into a headwind. They continued to take on water over the left side until they swamped. Luckily they were only fifty yards from shore and another canoe came to help. One student panicked in the water and was having trouble breathing and keeping her head above water, even though she had a life jacket on. She began to swallow water. The water was cold, with the wind too strong to try to swim to shore. They held onto the upturned boat until another canoe arrived. The people in the other canoe threw out the packs and took the swimmers on board and brought them to the shore of the nearby

island where they were warmed and given dry clothes to wear.
PROGRAM ANALYSIS: Load the boat properly with even weight distribution. Wait until the wind dies down to paddle.
WMRC COMMENTS: The rescue seems to have been well handled and this situation had a positive outcome. Though it is difficult to know from the narrative it seems that stopping to fix the weight distribution problem earlier would have been wise.

ROPES COURSE INCIDENTS

WRMC COMMENTS: *There 72,032 hours of ropes course activities reported. (Both high and low elements) There were 22 incidents on ropes courses with 8 injuries and 10 near misses reported. Of the 22 incidents seven (32%) were caused by failure to follow directions, five (23%) were caused by falls and/or slips.*

Unroped Instructor on Ropes Course Climbs Tower
CAUSE: Failed to follow instructions
CONTRIBUTING CAUSE: Poor judgment, inexperience
ACTIVITY: Ropes course
NARRATIVE: A staff member, was inconsistent with protocol, did not obey direct instructions from the lead instructor, and in front of clients, free climbed part of the climbing tower to break down an element. He failed to use the ladder while breaking down the tower. He free climbed up to the wooden crossbar inside of the tower in order to tie up the p-cord. He ignored direct orders from the lead instructor to get down immediately. Safety for himself and group members was discussed. He was told to never do that again. He apologized for not following protocol and he gave excuses for staying up and tying the p-cord. The proper procedure was discussed and he went back to the tower to continue breaking it down with another instructor.
PROGRAM ANALYSIS: The instructor's actions were witnessed by group members. This does not portray a positive instructor relationship and models inappropriate risky behaviors. This type of interaction needs to be avoided since it is damaging to group dynamics. The incident also put the instructor at risk of falling. The defiance caused the lead instructor to become angry.
WMRC COMMENTS: *We would also suggest that the incident puts this instructor at risk of losing his job.*

Client Almost Strangled in Belay Sling of a Zip Line
CAUSE: Poor design of zip line
CONTRIBUTING CAUSE
ACTIVITY: Ropes course
NARRATIVE: A client zipped down the zip line into the lake and got his neck caught up in the sling and almost strangled. He was rescued immediately by an instructor.
PROGRAM ANALYSIS: The belay sling needs to be redesigned. Having an instructor on the scene prevented a more serious incident.
WMRC COMMENTS: *This activity is done often enough that an appropriate belay sling system is known within the industry.*

Failed to Use Brake Hand
CAUSE: Failed to follow instructions, hit head on a tree
CONTRIBUTING CAUSE: Poor judgment, inexperience
ACTIVITY: Ropes course (high element)
NARRATIVE: The participant didn't use his brake, struck the end of the rope system, and cracked the helmet he was wearing on a tree.
PROGRAM ANALYSIS: The participant did not follow instructions to use brake; the end of the rope system could be padded; there is some question if participants had previously demonstrated they could perform the brake action.

Not Double Checking Climber's Harness and Tie In
CAUSE: Supervision
CONTRIBUTING CAUSE: Technical System
ACTIVITY: Ropes course (high element)
NARRATIVE: During the first part of the program day the staff took turns belaying clients up the climbing tower. When one staff replaced another as belayer, she took over "tying in" the client. The client already had a carabiner on his harness, but the carabiner was only clipped through the belt section of the harness, (not clipped through the crotch strap). The instructor realized she had not double checked the carabiner as the climber began climbing. Rather than act on her concern and have the climber start again, she assumed the carabiner must have been placed correctly, knew the backup knot was tied securely, and let the climber continue. The improperly clipped carabiner was confirmed when the climber completed his climb and was untying from the system.
PROGRAM ANALYSIS: Although no impact on the group, there was heightened awareness by staff members. The instructor's intuition was right. The lesson here is to trust your intuition in issues of critical safety. Be conservative. It is better to have someone down climb three feet and have his or her harness and knots checked than to rely on a back-up system.

WMRC COMMENTS: *As in rock climbing, sound judgment, if not protocol, clearly calls for all systems being double checked before someone starts climbing. The lesson here is to trust your intuition and make sure there is a procedure in place to check that people are properly tied in and that the system is sound.*

Participants Unclip from Anchors While Still on Belay
CAUSE: Supervision
CONTRIBUTING CAUSE: Haste, trying to please others
ACTIVITY: Ropes course (high element)
NARRATIVE: During the facilitation of the lower platform of the ropes course, three male participants completely unclipped from their anchors. The first unclipping occurred as one participant transferred from the bridge to the postman's walk; the second occurred as another participant transferred from the tension traverse to the upper platform; and the third occurred as a participant transition from the upper platform access pole to the lower platform. Another participant started to unscrew a carabiner on the upper platform and was stopped.
PROGRAM ANALYSIS: The way the situation developed prior to the ropes course was a factor in causing these incidents. The group arrived forty minutes late with the expectation of "doing the ropes course." There were also resentments because they had been denied the ropes course at the last minute on their previous visit to the facility, due to weather. They indicated their intense disappointment and pressured the instructors to provide a ropes course. Staff felt that pressure, and trying to appease the clients, they ran the rope exercises, but faster than normal and with less supervision.
Three immediate factors influenced this decision and led to the near misses:
1) None of the staff had facilitated the ropes course in the past twelve months.
2) There were too many clients on the course at one time (approximately three on each level).
3) With the rappel off-line it is extremely confusing and cramped as clients are required to simultaneously ascend and descend the upper access pole and as clients must wait their turn to either ascend or descend.

The following lessons should be considered and learned from this experience:
1) Instructors must follow their better judgment when deciding what events to present to a group. While we need to be diplomatic to clients, we must consider safety first.
2) The ropes course is very difficult to facilitate when we are unable to use the rappel to exit; it demands a minimum of three qualified

instructors.
3) A safe ropes course demands that instructors be up to date and currently trained; for this reason we should consider putting the ropes off limits until we have had a chance to provide further training to all potential ropes course instructors.
WMRC COMMENTS: *Good analysis by the program. Trying to please other is another leading cause of incidents.*

INITIATIVE GAMES INCIDENTS

WRMC COMMENTS: *There were 73,518 hours of initiative game activities reported and 15 incidents with 10 injuries. According to Project Adventure's twenty year safety study, the majority of injuries from games and initiatives are caused by slips and falls.*

Heads Collide During a Game of Tag
CAUSE: Speed
CONTRIBUTING CAUSE: Inattention
ACTIVITY: Initiatives and team challenges
NARRATIVE: An instructor and a client collided heads while playing a game of tag. The instructor dropped down to one knee and was in definite pain. The client spun around but never fell to the ground. Upon first assessment the client seemed to be stable; he was standing, breathing and did not appear to be in any immediate danger. The instructor, on the other hand, needed immediate attention. She was kneeling on the ground and seemed a little bit disoriented. Her vision was not clear for twenty to thirty seconds. She also had a fairly large bruise on her head. There was no trace of spinal fluid in her ears or in her nose.
The instructor and the client were then brought to the kitchen where they could sit down and apply ice to their heads. Upon the second assessment of the client, his eyes were equal and were responding to light stimulus. He did have a bruise on his head but seemed all right. The instructor seemed to have taken the major force of the hit on her head. Upon the second assessment of the instructor, she continued to be a little bit disoriented. Her eyes were unequal and very slow in responding to light stimulus. Her pulse was 100/minute and respirations 13/minute. She was rechecked five minutes later. Her eyes were still a bit unequal but they were responding to light stimulus. At the end of the check her eyes were no longer unequal.
The client was allowed to rejoin the rest of the group. The instructor was continually monitored. She took two ibuprofen pills for the pain. She didn't go to the hospital because her symptoms were slowly going away. She did call a doctor and he informed her about what symptoms

to look out for. In the morning, she had a headache and neck ache but appeared to be fine.
PROGRAM ANALYSIS: None
WMRC COMMENTS: *We suggest taking the instructor to a physician for evaluation.*

TRANSPORTATION/VEHICLE INCIDENTS

WMRC COMMENTS: *We all know that driving to and from program areas poses one of the greatest risks. It certainly is one situation where all participants are exposed to hazards. Programs should have clear expectations about allowable hours behind the wheel or combinations of field work and driving hours per day. Documenting regular vehicle maintenance, driving record checks, alcohol policies, and defensive driving training are components of risk management plans for transportation.*

Driving Off the Road
CAUSE: Fatigue
CONTRIBUTING CAUSE: Carelessness
ACTIVITY: Driving
NARRATIVE: The counselor driving the van had a "moment of inattentiveness" and the van slid off the right shoulder of the road. The van traveled in the ditch, parallel to the highway, and then up onto a side road where it came to a halt. People were shaken but unhurt. They changed drivers and continued.
PROGRAM ANALYSIS: Provide money for drivers to stop for food and switch drivers every four hours.

Hit a Deer While Driving
CAUSE: Poor visibility
CONTRIBUTING CAUSE: Haste
ACTIVITY: Driving
NARRATIVE: A small deer stepped out in front of the van. The driver decided to drive straight rather than swerve and take the chance of going off the road. There was no damage to the van and nobody in the van was hurt.
PROGRAM ANALYSIS: The group was driving longer and farther than they probably should have been. This probably could have been avoided had the group camped rather than decided to go to someone's cabin. We need to enforce our expectations for overnights on the way back to camp.

Bus Almost Went Off the Road
CAUSE: Narrow road
CONTRIBUTING CAUSE: Fatigue
ACTIVITY: Driving students
NARRATIVE: After a day of paddling I was driving a bus load of students up a long, winding, narrow road with numerous hairpin turns. On one turn I cut the curve just a little too sharply and the back wheel of the bus hit a 14" high boulder causing the back end of the bus to jump. Many of the passengers were severely jostled, though no one was hurt. A small dent was created in the wheel and a divot was taken out of the side of the tire. It did not go flat but was replaced to prevent further trouble.
PROGRAM ANALYSIS: Rock was right on the edge of the road which was one lane wide. Speed was less than 5 mph yet still could have caused injury. Drive slow on this road and be careful.

ILLNESS INCIDENTS

WRMC COMMENTS: *We have chosen to group the following illness incidents together rather than by activity. Often there is a less distinct relationship between an illness and the activity. There were a total of 114 illness incidents reported, see table two for the types. The cause of illness is often difficult to pin down and is unknown in 41% of the incidents. The "unknown" category of cause includes, abdominal pain, diarrhea, flu symptoms and fever, and a variety of other infections including, scabies, ear, eye, sinus and urinary tract infections. Presumably hygiene is a contributing cause, but the reports did not specify.*

Acute Abdominal Pain
CAUSE: Unknown, appendicitis
CONTRIBUTING CAUSE: Unknown
ACTIVITY: Bike touring
NARRATIVE: This student, a 17 year female, has a history of gastric ulcers. In the early afternoon she complained of stomach pain along with back and hip pain, but refused to take her prescription medication, Zantac®. By early evening she was in enough pain that cycling was difficult. She located her pain in the right and left upper quadrants and said it was different and worse than her usual ulcer pain. At 1730 she took her Zantac®, did not eat dinner, and went to bed. At 0500 the following morning she was in serious pain and her tent mate woke the leaders. The student said she took her Zantac® at 0200, but it did not help. Pain was still in the upper quadrants. Temperature: 100°F; heart rate: 90 beats/minute; respiration rate: 25 breaths/minute.

During the next half hour her temperature dropped to 99°F, heart rate to 80, and respirations to 20. A phone call was made to her parents on the cell phone and the leader and parents decided that she should be taken to her gastroenterologist. Around 0600 she ate two small spoonfuls of instant oatmeal and a small bite of banana. She slept all morning until her mother arrived at 1100. She walked to the car and reported the pain had subsided some. She experienced intermittent increases of pain on the three hour drive home. She was taken immediately to the emergency room to see her gastroenterologist, who found a temperature of 100°F, a slightly elevated white blood cell count, pain in the upper and lower right quadrants, with a descending line of pain on the right side. She was diagnosed with acute appendicitis and operated on immediately.
PROGRAM ANALYSIS: Leaders followed program protocol and involved parents (physicians) in the decision. If this was a backpacking trip the leaders would have insisted the Zantac® be taken to assess abdominal pain and the patient would have been evacuated within one to two hours of unresolved abdominal pain.
WMRC COMMENTS: *She did not present "classic" signs and symptoms of appendicitis, but the constant abdominal pain is a good reason to evacuate.*

Loss of Consciousness due to Diabetic Condition
CAUSE: Previous history
CONTRIBUTING CAUSE: Screening
ACTIVITY: Game
NARRATIVE: This case involved a client, 16 year old female, with diabetes that was self monitored for the past four years. While on the program the client, along with an instructor, monitored her glucose levels as well as her physical condition. Once on the course, the client also informed staff that she was two months pregnant. (This was not on the medical form.) Specifically she was asked if she had her insulin with her to which she answered, "Yes." The instructor gave specific directions to drink water, stay out of the sun, and not participate in the climbing tower due to her pregnancy.
At 9:30 a.m. the client sat out of the pivot tag game and checked her glucose level, which was at 216. (The emergency room staff later reported this was not a high risk level.) The client reported that she wanted to do something about the 216 and moved into a camper trailer to rest out of the sun and eat a peanut butter sandwich. She rejoined the group and participated fully during the problem solving initiative "acid river."
Before moving to the next activity she reported her pulse was elevated and she had high blood pressure. (Also not indicated in her medical history.) At 11:45 a.m. her pulse was ninety. It was decided to walk

slowly up the trail. On the trail she said she felt dizzy. At noon the staff rechecked her glucose level and it was 572. It was decided she would be evacuated. Vitals were monitored during evacuation. At 12:28 p.m. she vomited. At 12:45 p.m. she lost consciousness momentarily. She was kept awake by staff. She arrived at the ER at 12:55 p.m.. The patient's mother came and at 1:20 p.m. the staff returned to the group and discussed the incident. They used it as an opportunity to discuss personal safety, body awareness and basic first aid with students.
PROGRAM ANALYSIS: Everything concerned with the monitoring and evacuation of the client went well. The incident could have been prevented with accurate medical history information. The client also did not have her insulin handy at the time of the incident. The client was two months pregnant and it was later found out had a history of irresponsibly monitoring her health.
WMRC COMMENTS: *There should be a clear policy for when someone should participate in cases such as pregnancy and/or diabetes. Medical screening of participants is not fail-safe as it relies on disclosure of the participant to inform the program of any health conditions. The screening process continues up to the point when the participants arrive on site. Once the pregnancy was disclosed her participation in the course should have been guided by the program policy.*

Chest Pain and Asthma
CAUSE: Previous history
CONTRIBUTING CAUSE: Screening
ACTIVITY: Backpacking
NARRATIVE: The student, a 34 year old woman, stumbled and lost her balance. She complained of chest pain spreading to the arms, and asthma. She asked for pain tablets. She looked a bit weak. She did have a history of cardiac problems. She was relieved of her pack and walked without carrying any weight.
PROGRAM ANALYSIS: The patient had reported heart problems and asthma at the beginning of the course and was on medication. On this day she was a bit stressed. It is risky to allow people with these diseases in the field. Don't allow people with asthma in the field.
WMRC COMMENTS: *It's important for organizations to have a good process of medical screening and follow up. Prospective students should have a good intellectual knowledge beforehand of what the demands of the course or activity are going to be and should be instructed in some sort of pre-conditioning. Staff need to be briefed on the medical history of their students and have adequate training in handling the medical conditions they may encounter in the field. Careful monitoring of the level of physical activity and tailoring that activity to the situations at hand can contribute to making an outdoor education experience successful.*

Many people with asthma are fine candidates for wilderness programs. With proper medication, good physical health, adequate self monitoring and appropriate supervision, asthma is rarely a reason to keep someone from participating in an outdoor activity or expedition.

Seizure
CAUSE: Unknown
CONTRIBUTING CAUSE: None identified
ACTIVITY: Backpacking
NARRATIVE: The student, a 24 year old woman, lay on the ground, shaking and snorting in a typical epilepsy attack. Her head was held to prevent injury and when she regained her normal condition, she stated that she had never had an attack prior to this. After regaining full strength, she continued on the course. She was advised to see her doctor after the course.
PROGRAM ANALYSIS: Put program coordinator on stand-by in case of the need to evacuate.
WMRC COMMENTS: *While this student had no previous history of seizure activity, the appropriate course of action would be to have the student evacuated and evaluated by professional medical personnel. Individuals in a seizure should not be restrained.*

Altitude Illness

WRMC COMMENTS: *There were six incidents of illness attributed to altitude. All six cases were of varying degrees of Acute Mountain Sickness and none were serious.*

Judging from the degree of altitude illness reported it seems that high altitude illness was over diagnosed. The good side of this is that staff were keenly aware of the possibility. That sensitivity to the possibility of AMS is more important than accidentally over-diagnosing it. Descending to treat the symptoms would also place the patient in a better position for further evacuation if symptoms continue to develop due to some other serious condition.

When reporting it is better to list the symptoms rather than simply state "showed AMS symptoms." Signs and symptoms of AMS such as headache, malaise, loss of appetite, nausea, vomiting, peripheral edema, disturbed sleep, may also indicate dehydration, heat exhaustion, flu or other illness. Details such as the rate of ascent, elevation of the incident, sleeping elevations, hydration and general health state of this participant are valuable in reviewing altitude illness.

Acute Mountain Sickness
CAUSE: Altitude
CONTRIBUTING CAUSE: Fatigue
ACTIVITY: Hiking
NARRATIVE: After a full day of hiking, a 13 year old male participant was extremely fatigued and showed AMS symptoms. The group descended 800 feet and camped. He slept well that night and hiked fine the next day.
PROGRAM ANALYSIS: Options should be prepared for alternative lower altitude routes.

Cardiac/Chest Pain, AMS Symptoms
CAUSE: Unknown
CONTRIBUTING CAUSE: Previous history
ACTIVITY: Backpacking
NARRATIVE: A 17 year old male participant developed episodic chest pain, difficulty breathing, dizziness, disorientation, was unable to walk without assistance, and had difficulty spelling his name. These episodes came and went over several days. The staff requested help evaluating the patient. Forty-eight hours after the first episode the patient was evacuated by helicopter after a short litter carry. A doctor diagnosed the patient as experiencing AMS. The patient's mother reported a history of cocaine and alcohol abuse and several episodes of similar pain in the previous months.
PROGRAM ANALYSIS: The following recommendations were made: 1) A secondary survey should be done before an emergency note is sent from the field; 2) Documentation needs to be thorough and include all possible diagnosis and the thought-out process of the instructors; 3) An evacuation should have been requested immediately since a person was sent out to get assistance; 4) Continued and more intensive training for administrative and field staff regarding incident command structure, efficient information transferal, pre-course screening, and helicopter evacuation procedures.
Staff should have been more diligent in asking about previous medical history and drug use.
WRMC COMMENTS: *The ataxia and altered mental status suggest AMS progressing to HACE. (High Altitude Cerebral Edema) It appears from the program analysis that this incident stressed the organization's emergency response procedures because the level of detail in the recommendations is more than indicated in the narrative.*

Cold Illness

Mild Hypothermia Ascending a Mountain in a Storm
CAUSE: Cold exposure
CONTRIBUTING CAUSE: Supervision
ACTIVITY: Mountaineering
NARRATIVE: A 17 year old female student became hypothermic while ascending a mountain in cloudy, windy, and rainy weather conditions. Most of the walking was in the wind on the ridgeline. The student was not showing symptoms until we sat for lunch (out of the wind). She did not put on dry clothes even when told to. An instructor noticed her in a fetal position during lunch. She started crying uncontrollably and complaining of pain in the legs. While a tent was put up she was wrapped in a sleeping bag. Cold wet clothes were removed and replaced with dry, warm clothing and a hat. Then all nine students got into the tent with two in the sleeping bag. We stayed there for an hour and a half before continuing the ascent.
PROGRAM ANALYSIS: Physically check students clothing to make sure they are dressed properly in bad weather.
WMRC COMMENTS: *If students aren't receptive to the common sense suggestions of others, or are acting tired, that in itself could be a sign of mental deterioration due to hypothermia. Such subtle early signs of a person's mental acuity can be the hardest to catch, but the environment and the activities taking place should key an experienced person into the possibilities that mild to moderate hypothermia is indeed taking hold of someone.*
Regardless of the reasons for the student's behavior above, the scenario as described is not an appropriate place for people to be getting away with not heeding the advice of trained outdoor professionals. One cannot sit around after arduous physical exertion in wet clothes and in cold, wet, windy conditions and expect to be okay. If the suggestions of putting on dry clothes, eating food, taking liquids, doing exercises, and finding a wind break are not being heeded by a student, it's time for more directive leadership.

SOFT TISSUE INJURIES

Allergic Skin Reaction
CAUSE: Unknown
CONTRIBUTING CAUSE: None identified
ACTIVITY: Backpacking
NARRATIVE: After coming off solo, a 14 year old female student had a rash on her neck which spread to her abdomen and ankle. It was red,

burning, and itchy. We applied Phenergren® to the affected areas. There was a slight improvement. The next day more cream was applied and she was given an antihistamine. The rash was kept under control and she went home with it not having cleared up.
PROGRAM ANALYSIS: The student developed an allergic reaction to something unknown. Staff are trained to always observe students for reactions to various things. Medical history is important to study. In this case it was the first time she had experienced this sort of reaction.
WMRC COMMENTS: *It can be useful for program management to follow up after the student returns home to learn what the diagnosis was.*

A Soft Tissue Injury Treated by the Student with Staff Guidance
CAUSE: Fall/slip on rock
CONTRIBUTING CAUSE: Wet slippery terrain
ACTIVITY: Swimming
NARRATIVE: The group was swimming off a rocky point with a big drop off. When one of the students was getting out of the water he slipped and fell on the rocks. He showed the injury to his counselor and the counselor had him clean it in the water right away. The counselor then had the student put pressure on the cut to stop the bleeding. After about ten minutes the area was cleaned with soap and water. It then started to bleed a little bit again so pressure was applied again. Once the bleeding stopped, antibacterial ointment was applied along with two bandaids to cover the injury. The student did all of the work while the counselor coached. He did that so he did not have to touch the cut, because it was bleeding.
PROGRAM ANALYSIS: To prevent this injury I should have found a different place to get out or warned the kids to get out carefully. Prevention can be hard; fourteen-year olds fall a lot, it seems.
WMRC COMMENTS: *First aid was done properly and having the student do the cleaning and bandaging is a good educational experience. This incident points to the need to have gloves in first aid kits so staff can treat soft tissue injuries. It's important that staff are properly trained in the specifics of blood-borne communicable diseases so that they are acting with a sound knowledge base of what risks are involved in handling another person's blood.*

BEHAVIORAL INCIDENTS

WRMC COMMENTS: *There were 40 incidents of misbehavior in the 1991-1997 data set, though this was the cause of only two physical injuries. Behavioral incidents, while common in therapeutic programs can be found in any adventure-based program and leaders should know to what level they are expected to intervene. Certain overt acts of misbehavior may involve one or two individuals, but often less overt acts can significantly affect the emotional safety of all participants.*

The following are basic components to successful management of behavioral incidents.
Behavioral symptoms: On going assessment of participant behavior is essential when working with any population, but especially adjudicated youth. Recognition and anticipation of behavioral symptoms is critical to warding off incidents.
Supervision: Appropriate levels of supervision combined with recognition of behavioral symptoms can help prevent or mitigate the severity of behavioral incidents. Appropriate staff to participant ratios and the appropriate presence of staff among the participants at all times are key factors. It must be acknowledged by program management and staff that handling misbehavior requires a significant investment in time and a high level of supervision, potentially at the expense of other program goals. This acknowledgment can be useful in determining the level of tolerance the program has for misbehavior.
Screening: Screening is often a component of incidents involving misbehavior. Screening is not fail-safe as it can be difficult to anticipate behavior prior to acceptance and participation in a program. It is an important component of the analysis of any incidents to determine if changes are necessary.
Policy and Protocol: Having established policies and protocol for handling specific situations or defining the level of acceptability of particular behaviors can be a vital tool for staff in handling behavioral incidents.

Student Ran Away During Solo
CAUSE: Psychological
CONTRIBUTING CAUSE: Supervision
ACTIVITY: Backpacking
NARRATIVE: A male student ran away during solo. He was eventually caught by the sheriff eight days later outside the wilderness.
The student was put on solo at about 6:00 p.m. on 12/12. The distance from his solo site to base camp was about 200 yards, out of site of the

instructors. On 12/13, at 10:30 a.m., the instructors checked the group solo site and discovered the student was missing. A quick hasty search was conducted in the immediate vicinity of the solo site and then a more thorough search around the site. At 12:10 p.m. the instructors met to discuss a plan and decided he was either taking a short day hike or had run away. The other students were questioned, but they knew nothing of the missing students whereabouts. Searching continued for the rest of the afternoon. The five instructors decided that two of them would hike out and inform the National Park Service to initiate search and rescue procedures and inform the other involved organizations. The rest of the group would hike out the next day. The student remained in the vicinity and was in custody on 12/20, eight days after running away.

PROGRAM ANALYSIS: Staff, in hindsight, think they missed clues that this client was a possible runaway during solo. These clues included general unresponsiveness to instructions, disrespect, violation of the smoking policy, declining responsibility and group relationship problems. The missing youth seemed especially looking forward to solo. Throughout the course there had been psychological issues such as violent reactions and depressive episodes.

The protocols governing student solo time is being examined with the possibility that both verbal and visual checks on the student will be required as often as every four hours during daylight, and at dusk and first light.

WMRC COMMENTS: *This incident illustrates the importance of ongoing assessment of behavioral symptoms. Additionally, sticking to the schedule (putting the student on solo) given the remoteness of the area and the erratic behaviors of the student, points to questionable instructor awareness and intervention.*

The fact that the program, as result of this incident, is examining the role and appropriateness of solos with various youth is both positive and responsive given the seriousness of this incident.

A Fist Fight Causes Other Students to be Left Unsupervised

CAUSE: Misbehavior

CONTRIBUTING CAUSE: Supervision

ACTIVITY: Camping

NARRATIVE: While an adult staff member stepped out of one of the designated boy's cabins to brush his teeth, two boys got in a physical argument over a flashlight. One of the boys punched the other in the lip, which clearly required stitches. The first boy's hand was swollen. He was able to move all of his fingers, though the skin on his hand was broken from contacting the other's tooth. Upon evaluating the immediate situation, two staff members agreed that the second boy

should be evacuated and taken to the emergency room. The course medic evacuated the boy in the van. It was later discovered that the boy had an outdated medical release form. A verbal release was then obtained from the boy's mother. The boy received stitches and was released. The two boys then slept in different cabins.
PROGRAM ANALYSIS: This altercation was very unexpected, as these two boys were cooperative, and long-time friends. During the commotion, the girls were worried and stayed awake talking with the staff for another hour. All staff, as well as participants, received less than ideal rest after a long day. The group was sleepy and less positive than they likely would have been on their last day had the incident not occurred. During the commotion, both of the boys' cabins were left briefly unsupervised which could have led to another incident. It is important that lead staff and medics are aware of evacuation protocol. An emphasis needs to be placed on continuous supervision of all clients during critical situations.
WMRC COMMENTS: *There are two issues here: 1) the fight and the level of aggression involved. As stated above there are usually signs and symptoms leading to such a physical exchange. 2) The student's medical release form was outdated. Clear policies that are understood and followed could have prevented some of the confusion during the evacuation as well as the additional work, i.e., having to call the parents to get a verbal release to medical treatment. Had this been more serious not having a signed release could have posed a threat to immediate medical care.*

Student Evacuated for Inappropriate Behavior
CAUSE: Misbehavior
CONTRIBUTING CAUSE: None identified
ACTIVITY: Backpacking
NARRATIVE: A male participant was removed from camp after being on a behavioral contract, missing his check-ins, and showing little personal investment in camp. The participants attitude had been extremely negative, his language inappropriate, and his respect for others lacking. For a long time he had been asking to be taken back to base camp. At the time of removal, he stated that he wanted to stay in camp. Staff felt that the participant was not ready and or willing to do what was expected of him behaviorally at this time. Staff also felt that he had plenty of chances to improve his behavior and had not done his part. The participant would not follow staff instructions was a negative leader/influence in the group.
PROGRAM ANALYSIS: Staff felt that the participant could participate again at some time in the future. If he is willing to improve his behavior in the areas of respect toward others, language, not using intimidation, following staff instructions and playing a generally more

positive role in his group.
WMRC COMMENTS: *The instructors made the correct decision to remove the participant. This is often a difficult decision in back country settings where evacuating a student is often challenging, especially if the student does not want to leave the program. Screening may have been a factor in this incident as well.*

Participant Picking Fights With Peers
CAUSE: Misbehavior
CONTRIBUTING CAUSE: None identified
ACTIVITY: Camping
NARRATIVE: A male participant had shown a history of picking on others including name calling, "crack head, crack baby, etc." He typically nags and picks on a student until it escalates into a face off. This happened earlier in the week with the participant calling another participant "cracker" and then hitting him in the face. A staff member found the boys fighting. The first participant was caught in several lies during the ensuing investigation. The other students could not verify his story. Both students were removed for fighting.
PROGRAM ANALYSIS: Fights can erupt in seconds.
WMRC COMMENTS: *This is a supervision issue. There was a clear build up of tension and aggravation with these two students. Intervention with this type of student needs to be clear and concrete from the start of a program, i.e.: contracting and/or consequence. Given the history of nagging and picking on other students closer supervision and intervention may have avoided the fight and the removal.*

Student Threatens Other Peers and Causes Discord
CAUSE: Misbehavior
CONTRIBUTING CAUSE: None identified
ACTIVITY: Backpacking
NARRATIVE: A 15 year old male participant had been on contract for nine days for instigating and participating in arguments every day. He admits that the reasons for his arguments are trivial but replies that is just how he communicates. The result of his behavior is highly disruptive in that staff are forced to spend the majority of their time monitoring him. In recent days he has been operating more covertly behind staff's backs or just out of earshot. An additional concern was his repeated threats to peers.
PROGRAM ANALYSIS: None
WMRC COMMENTS: *This is clearly a therapeutic situation where facilitation from the staff is crucial in keeping the group feeling safe. It is unclear from the description how this situation was resolved and what the staff's role was in diffusing the situation. The report is incomplete in these regards.*

Unruly Participant Causes Disturbance on the Bus
CAUSE: Misbehavior
CONTRIBUTING CAUSE: None identified
ACTIVITY: Transporting students
NARRATIVE: While traveling with the large group on the bus, one participant made fun of another. Other members of the group began to talk back to the first participant who then jumped up and threatened everyone saying "I can kick any person's ass on the bus!" At this point a staff member escorted him off the bus, after he had repeatedly asked him to sit down. The participant was warned to sit in his seat when he returned to the bus. When he returned to the bus he again caused conflict by threatening people. The group drove to base camp where he was removed from the program.
PROGRAM ANALYSIS: Although prior to this incident the participant had not exhibited such extreme behaviors, it seems that something set him off and he was unable to maintain appropriate communication and behavior in this instance. From listening to descriptions of this incident it seems as if many others in the group were on edge and not very "controlled" in their behaviors. The participant chose to act out which created the potential chaos amongst the entire group. Given that they were driving down the highway at 55 mph this could have been very significant had the situation worsened. Staff do their best to maintain order during bus travel but we must be aware that anything can happen. If we see patterns in behavior heading towards a situation like this, let's try to stop it before it goes too bad.
WMRC COMMENTS: *The program analyses in this incident is good. It was appropriate to stop the bus and have the student get off. However, it is unclear what type of intervention was done when the student exited the bus. Perhaps a longer time away from the other students would have helped him de-escalate further. Helping students regain self control and composure is an important instructor skill, as is conflict resolution.*

Participant Becomes Threatening and Bullying
CAUSE: Misbehavior
CONTRIBUTING CAUSE: None identified
ACTIVITY: Canoeing (flat water)
NARRATIVE: On the canoe trip, a male participant made physical contact with another student. After being confronted he admitted to "mushing him." The participant was already on contract for pushing a student, so the consequences given were very serious: loading all the boats, unloading the packs, writing assignment, rewritten contract, and no tough guy talk. He chose to accept the consequences instead of being removed. Once in camp he lost control. He walked up the path yelling

"Send me back! I'm not camping here!" I caught up to him and reminded him he was on a thin line. He screamed at me and we ended up in the line of sight of the tent group. I told him to sit on a log that was out of the line of sight at which time he screamed obscenities. He said "You can't make me!" and I said that was true. He kept taunting me to "try and make me." At this point, because of his posturing (pumping chest, flexing arms, staring down power stance), the inflection of his voice and his demeanor, I perceived that I was being threatened. I told him to stand to the side of the trail (which he did) while I went and got another staff member. He cooperated with staff fully when he believed he was being sent back. We offered him dinner and breakfast, but he refused.

"D" did follow instructions after the incident, but this seemed to result from the fact that he got his way, which makes the whole incident a form of manipulation. He calmed down when he perceived that he "won."

PROGRAM ANALYSIS: Take requests to be removed seriously. On the river, when told of the no tough guy talk consequences he began posturing and saying we can't make him do that. We should have called him on that when we got to the take out and removed him if the attitude/posturing continued.

WRMC ANALYSIS: *The student was clearly threatening the staff and other students. Staff responded well by not getting into a power struggle when he was agitated, though, it seems like he may have intimidated the staff from the start. Removing the participant was appropriate. Removing a threatening student from a course can be challenging, but having clear protocols and policies is important.*

Stress of Being Lowered Creates a Flashback for Participant

CAUSE: Technique

CONTRIBUTING CAUSE: Stress

ACTIVITY: Ropes Course (high element)

NARRATIVE: The client was on the dangle duo waiting to be lowered. The ladder was not pulled out of the way and there was a delay in lowering the client while the ladder was moved. The client screamed began to get agitated and became emotionally as well as physically traumatized. She screamed she "felt like she was being raped". Once on the ground she was frantic to get out of the harness and was angry at her belayer and repeatedly stated how it hurt being lowered. The male instructor belayer felt helpless but the female instructor present helped her get out of the harness, stayed with her and calmed her down. She was emotionally distressed and the female instructor responded through active and reflexive listening. The entire group debriefed the incident and the clients experience was addressed through active listening, validation of feelings, giving positive

encouragement for freely expressing her feelings and stating her needs, and the instructor apologized for the delay in lowering
PROGRAM ANALYSIS: This student later disclosed that she was a survivor of sexual assault. The instructor realizes that client should not have been delayed in lowering her and the ladder should be moved first before lowering. The female instructor felt competent in her immediate response to the clients needs whereas, another instructor (male) shared his frustration in not being able to assist due to his gender and the client's response towards him as the belayer.
WRMC ANALYSIS: *The situation that occurred during a seemingly stressful moment, is not uncommon for survivors of sexual assault. In clinical terms it is referred to as a flashback. The instructors did a good job working with her, given the intensity of the situation. This instructor seemed to be trained in how to work with someone having a flashback. It is important to note that this can happen in non-therapeutic group, so understanding the dynamics of flashbacks is important to all instructors/facilitators.*

Client Suspected of Huffing Gasoline
CAUSE: Medication/drugs
CONTRIBUTING CAUSE: Misbehavior
ACTIVITY: Camping
NARRATIVE: A client was suspected of inhaling fumes from white gas container. The staff immediately gathered the fuel bottles and stoves and locked them in the van. The student was confronted the next morning and warned that trust had been lost with him and that he would be watched closely form then on.
PROGRAM ANALYSIS: The staff's vigilance went up a notch to maintain a higher awareness of this and other possible negative activities being acted out. Fuel bottles and stoves were only brought out at meal times and monitored closely. Immediately after their use they were gathered up and secured in the locked van. This incident was the result of the instructors lack of awareness and could have been avoided.
WRMC ANALYSIS: *Having a clear secure fuel policy is one way to prevent this from happening. Fuel should not be accessible to at risk clients, as huffing gas is common in certain regions of the country. Instructor awareness and supervision also played a part in this situation.*

Unwanted Sexual Advances Between Participants
CAUSE: Failed to follow instructions
CONTRIBUTING CAUSE: Supervision
ACTIVITY: Non-activity (sleeping/eating)
NARRATIVE: I was informed by a male student that another male student made sexual advances on him after they were told to go to

sleep. Upon further questioning of other students the story was confirmed that some kind of sexual misbehavior had occurred but staff could not determine exactly what.
PROGRAM ANALYSIS: With this particular group it is recommended they be required to be read to prior to going to sleep. Also closer staff supervision is needed until they go to sleep.
WRMC ANALYSIS: *Client to client sexual advances and or harassment is a serious issue for programs to be aware of as it relates to group dynamics and federal and local laws. Having a program protocol or policy is important in handling client to client sexual issues. It is unclear in this report if the student who made the advances was talked to by the instructors. Certainly this student needed intervention, as any sexual advance, can disrupt the group and create both physical and emotional safety issues.*

Participant Threatening Others with Verbal Abuse
CAUSE: Misbehavior
CONTRIBUTING CAUSE: None identified
ACTIVITY: Unknown
NARRATIVE: A male participant had a difficult day following staff instructions. He left the program area loudly and showed disrespect to staff. Staff discussed the behavior with him and another participant. When the first participant got on the bus he started rapping about the program. He said "In this place I'll scratch all the staff in their face." Then he continued, saying M'f'ers and getting a gun and shooting staff. At our destination I gave him space on a picnic table where he began yelling threats, throwing rocks, and trying to involve others in his negative attitude. Staff asked him to calm down, which took a long time. He then went to the bathroom and was asked to return to the picnic table. He did not return but went over to the tent group. Eventually, with repeated requests he returned to the picnic table. At one point he asked me to come over and talk with him and then mumbled under his breath, "Watch what I'll do to her." Other students told him to "chill out." During this time the behavior of the entire group became very difficult to handle.
PROGRAM ANALYSIS: None
WRMC ANALYSIS: *This incident raises questions about staff intervention. It seems that the student was running the program, as opposed to the staff. It is unclear if the staff felt threatened and were not comfortable confronting him or facilitating some kind of therapeutic intervention. As often happens the rest of group then begins to follow suit, which is why it is so important to intervene sooner than later to prevent the behavior from escalating.*

Misbehavior Leading to Disruption of the Course and One Student Removed

CAUSE: Misbehavior

CONTRIBUTING CAUSE: None identified

ACTIVITY: Climbing (rock)

NARRATIVE: After hiking down to camp the group was collecting climbing gear to send back. While doing this the group began to throw rocks and started to become disruptive. An instructor asked the group to stop. While he was talking to the group they all started to laugh and make gestures at another student. The instructor turned to the student and saw that he had pulled his pants and underwear down past his knees and was bent over showing his rear to students and staff. The student was put on time-out. It was decided to remove him from the program. He apologized to staff before he left.

PROGRAM ANALYSIS: This was a student seeing how far he could get away with things. The students had been pushing their limits all day and some of them thought camp is a place where they can do whatever they want. On these short programs we need to set clear boundaries right at the start. Students need to know that certain behaviors are not accepted at camp.

WRMC ANALYSIS: *The student who disrobed his pants clearly was seeking attention and pushing limits of the staff, and a time out was in order. Setting clear boundaries right form the start was an important lesson for the program. Removing the student from the group sent a clear message that this kind of behavior will not be tolerated.*

Participant Removed From Course for Failure to Meet Behavioral Contract

CAUSE: Misbehavior

CONTRIBUTING CAUSE: None identified

ACTIVITY: Backpacking

NARRATIVE: A male participant was removed for failure to meet the expectations of his behavioral contract. Some of his behaviors included instigating arguments or fights, swearing, and failure to follow staff instructions. Despite incurring consequences because of his failure to meet the contract, having been counseled daily and warned of imminent removal if his behavior did not consistently improve.

PROGRAM ANALYSIS: During removal the participant stated numerous times that he would kill himself it he was sent back to training school.

WRMC ANALYSIS: *Removal seemed evident, but the information in the program analysis is an incident that should be written up as well. Threats of suicide are always to be taken seriously. Program policy and protocol comes into question here, as it is not clear how that information was handled or debriefed by the program.*

Section 4: CONCLUSIONS

It must be remembered that this report is only representative of the organizations that contributed data. Within this context the statistics were presented in as objective a fashion as possible, but are clearly biased towards the organizations and activities represented. The information contained in this report is not intended to represent the state of the outdoor/adventure-based programming field. Any generalizations to that effect would be erroneous and inaccurate. The selected narratives are also influenced by the limitations of the available data and the bias of the editors. They were selected for their educational and value and we hope they can be useful in staff training and risk management planning.

The inconsistent and sporadic nature of the data collected does not reflect well on our profession. Inconsistent reporting to a central database inhibits our ability to protect the health and safety of our clients, participants, students and staff. The lack of knowledge of accidents and incidents in adventure-based programming significantly limits our ability to educate participants, parents and the legal and insurance entities that we must work with. Our incentive for reporting is to provide a truly representative database from which to draw conclusions. Through better participation all outdoor and adventure-based programs can collectively help to strengthen the industry. This report represents 8.4 million hours over a nine year period. The 1995 report stated that the 400 AEE member organizations represented 35 million hours in one year. Clearly more reporting is necessary for the success of this project.

In compiling this report two other deficiencies have become clear. The quality of reporting needs to be greatly improved. As stated in the introduction to the narratives many hours of editing were done to get the narrative sections into a readable and understandable form. We understand that writing a field incident report is usually done under less than ideal conditions, but we hope this project can influence and improve the quality of reporting. As stated under Injury Rates the use of rates per million hours is not very meaningful and more thought needs to be put into whether this is an appropriate measurement unit. We will continue to collect activity data in hours as it may be the most accurate way of breaking out specific activities.

The continuation of the Wilderness Risk Manager's Committee Incident Data Gathering Project will greatly enhance our ability to address risk management issues and improve the service and quality of programs we offer to the public.

APPENDIX

WILDERNESS RISK MANAGERS
INCIDENT REPORTING PROJECT

The incident reporting project is a joint endeavor between the Wilderness Risk Managers Committee and the Association for Experiential Education. Goals of the project are:

- To provide a tool to educate interested parties (insurance industry, program managers, public land managers, participants, etc.) about the risk management implication of different adventure activities.

- To provide a significant and comprehensive incident database upon which statistical analysis can be done to provide a collective knowledge base and reliable information source for the field of adventure programming.

- To provide a central reporting forum for incidents in adventure programming.

- To enhance the collective judgment of the field of adventure programming by examining trends within it.

In addition to being a central reporting database, the project will produce a periodic publication of data and narratives from prior year's reported incidents. Deadline for submission is March 15th for the prior year's data. The publication can be ordered through the Association for Experiential Education (303-440-8844).

Who Should submit data?

All organized programs offering adventure-based experiences to clients are invited to participate. Guidance about appropriate activities that the database tracks can be found on the Demographics Cover Sheet. The project seeks data from adventure related businesses, adventure-based summer camps, colleges and universities, public and private schools, adventure -based counseling programs, corporate training programs and other similar organized adventure-based programs.

What Does It Cost To Participate?

There is no fee to submit data to the project. Programs submitting data will receive the periodic publication free of charge.

A Word About Confidentiality

Information on programs reporting data will be kept confidential. Program names, participant and staff names, and place names of incident locations will be held in the strictest confidence.

END OF YEAR DATA SUBMISSION

Demographics Cover Sheet

With the goal of creating a comprehensive data base, it is important that programs submit a demographics cover sheet regardless of whether or not the have had any reportable incidents. The demographics information allows for the calculation of incident rates and to accurately portray the types of programs participating in the project.

Time Frame For Submissions

The deadline for submission of the prior year's data is March 15.

Individual Incident Reports

Along with the demographics cover sheet, submit individual incident report forms for any reportable injury, illness or near miss that meets the criteria listed below.

Computer Submission of Data.

A computer entry form is available. This form is compatible with File Maker Pro for Macintosh version 3.0v4 or higher. For details contact Drew Leemon at (307) 332-8800 ext. 256 or email to dleemon@nols.edu.

Please Submit Data To:

Association for Experiential Education
Adventure Program Incident Reporting Project
2305 Canyon Blvd., Ste. # 100
Boulder, CO 80302-5651
(303) 440-8844
(303) 440-9581 fax

COMPLETING INDIVIDUAL INCIDENT REPORTS
WILDERNESS RISK MANAGERS COMMITTEE
INCIDENT REPORTING PROJECT INSTRUCTION SHEET

This report was designed with the intent that it be useful for program records and incident documentation as well as the incident data gathering needs of this project. The form itself can be used both to record pertinent incident data, and essential patient information. As a reminder, statements of witnesses are recommended information for a program to obtain in the event of an incident, but are not necessary to submit to this database.

Reports for each incident should be submitted to:
Association for Experiential Education
Wilderness Risk Managers Incident Report
2305 Canyon Blvd. Suite #100
Boulder, CO 80302-5651
303-440-8844
303-440 9581 (fax)

Incident Report Instructions
Accurate and compete reports are essential to the strength of this database. The following instructions are provided for completing the Incident Report Form. **Questions about completing the incident report should be directed to Wilderness Risk Managers Committee member Drew Leemon at NOLS (307-332-8800 ext. 256).**

A reportable injury or illness meets one or more of the following criteria
-requires more than simple first aid such as a bandaid
-requires more than cursory staff attention
-requires follow-up care by staff in the field
-requires use of prescription medications
-interferes with the participants participation
-is evacuated
-is a lost day case

Program/Course Name and Address
The name of the program. It will be used to confirm unclear data and will be kept confidential.

Program/Course Type
This should be a brief description of the type of program, i.e. outdoor adventure, therapeutic, adjudicated youth, etc.

Name
The name of the person involved in the incident. This is included for

completeness of the program's records. The name can be omitted or covered on forms submitted to the WRMC.

Age, Gender and Staff or Participant, Incident Date, Time

Self explanatory

Day of Course Incident Occurred

The number of days the participant was in the field prior to this incident.

Program/Course Area

This should be a geographical description of the program area; e.g. Wyoming, Bighorn Mountains, Mt. Badly or Vermont, Green Mountains Long Trail.

The Weather at Time of Incident

Air temperature, wind speed, precipitation amount and type, visibility

Type of Incident

An incident may result in injury, illness, motivation/behavioral outcome or a near miss. Check each applicable category. Injury includes damage to property e.g. van, kayak.

Lost Day Cases

A lost day case occurs if a participant missed one or more days of activity beginning with the day following the incident, or if it causes loss of more than half of the day of the incident for morning mishaps.

Near Miss Incidents

A "close call".

A potentially dangerous situation were safety was compromised but that did not result in reportable injury.

An unplanned and unforeseen event. This rules out situations such as routine towrope falls, failure to roll a kayak for a beginning student, or a fall on the trail with no injury.

A situation where those involved express relief when the incident ends without harm.

Motivation or Behavioral Incident

Examples would be unwillingness to participate, running away, alcoho or drug use, assaultive behavior, suicidal ideation, or an emotional or psychological situation that compromises the students ability to participate in the program.

Evacuations:

Evacuations are incidents in which the person leaves the field as a result of the incident. There are several levels of definition which aid in defining the seriousness of the incident:

-participants who leave the field
-participants who seek medical care
-the type of evacuation (assisted by litter, helicopter etc. or the patient was able to walk out unassisted)
-if hospitalization was required
-if the participant returns to field

Property Damage

This is included to make the program's records complete for insurance purposes. Circle if property, equipment or vehicle damage occurred.

Type of Injury

All the applicable categories should be checked. Please specify the injury if the "other" category is checked.

Anatomical Location of Injury

All the applicable categories should be checked.

Type of Illness

All the applicable categories should be checked. Please specify the illness if the "other" category is checked.

Activity at Time of Incident

The applicable categories should be checked describing the program activity the person was engaged in at the time of the incident.

Immediate Cause of Incident

This is a list of common incident causes in outdoor programming. Prioritize the applicable categories 1, 2, 3, etc.

Narrative

Describe the incident. What, how and when it happened, any medica treatment, the final medical outcome or diagnosis.

Analysis

Include any observations, recommendations or suggestions regarding prevention.

Patient Report

This section is included to make the program's records on the incident

complete and is designed to serve as both a field report form or "run sheet", a record of medical assessment and treatment, and corresponds to the Field Report Form carried in many first aid kits.

Modifying the Incident Report Form

Some program may feel the need to track additional information not found on this form. Certain aspects of the form can be deleted and additional sections added to suit the needs of the program. In order to maintain the integrity of the database the following sections **cannot** be deleted.

- Program Name and Type
- Incident Date and Time
- Geographical Location
- Weather
- Type of Incident
- Type of Injury
- Anatomical Location Injury
- Type of Illness
- Program Activity
- Narrative

Programs may **add** to the categories in these section for their use.

WILDERNESS RISK MANAGERS INCIDENT REPORT

Program/Course Name _____

Program Type _____

Staff _____ # Participants _____ # Program Days _____

Name _____ (circle) Male/Female

Staff/Student Age _____

Incident Date _____ Time ___:___ AM/PM Day of course incident occurred _____

Geographical Location of Incident _____

_____

WEATHER at Time of Incident:

Temp (°F) _____ Precipitation (circle) Rain or Snow or None

Wind (mph) ___ Visibility _____ (ft or miles)

Surface Condition (circle) wet dry snow ice trail rock uneven flat sloped

---

TYPE OF INCIDENT: Check each applicable category:

Injury_____ Illness_____ Motiv./Behavior_____ Near Miss _____

Is this a Lost-Day case? ____NO YES____ If Yes, # of Days Lost_____

Did the victim leave the field? NO _____ YES_____ If Yes, on what date _____

Evacuation method (circle) walk unassisted, litter, vehicle, helicopter, other_____

Did the victim visit a medical facility?_____NO ____YES If Yes, length of stay in days_____

Did the victim return to the course?_____NO ____YES If Yes, on what date _____

Was there damage to (circle) vehicle, equipment or property?

_____

TYPE OF INJURY (check all that apply)

_____bruise, contusion
_____ligament sprain
_____muscle strain
_____frostbite
_____fracture
_____dislocation
_____head injury w/o loss of consciousness
_____head injury w/loss of consciousness
_____near drowning
_____other _____

_____immersion foot
_____tendonitis
_____eye injury
_____dental
_____burn
_____blister(s)
_____laceration
_____skin abrasions
_____sunburn

ANATOMICAL LOCATION OF INJURY

_____Head	_____Forearm	_____Pelvis
_____Face	_____Wrist	_____Hip
_____Eye	_____Hand/Fingers	_____Thigh
_____Neck	_____Chest	_____Knee
_____Shoulder	_____Abdomen	_____Lower Leg
_____Upper Arm	_____Upper Back	_____Foot
_____Elbow	_____Lower back	_____Ankle
		_____Toe

TYPE OF ILLNESS (check all that apply)

_____allergic reaction
- _____mild or localized
- _____severe, generalized or anaphylaxis

_____altitude illness
- _____acute mountain sickness
- _____pulmonary edema
- _____cerebral edema

_____hypothermia (specify core temperature if known __°F/__°C

_____heat illness (specify core temperature if known __°F/__°C
- _____heat exhaustion
- _____heat cramps
- _____heat stroke

_____chest pain or cardiac condition

_____upper respiratory illness (runny nose, congestion, "cold")

_____upper respiratory illness (other)_____

_____abdominal or other gastrointestinal problem without diarrhea

_____diarrhea

_____apparent food-related illness

_____nonspecific fever illness

_____urinary tract infection

_____skin infection

_____eye infection

_____other_____

PROGRAM ACTIVITY (activity at the time of the incident)

_____Backpacking	_____Kayak	_____Ski w pack
_____Camp	_____Mountaineering	_____Ski w/o pack
_____Canoe	_____Portage	_____Sea Kayak
_____Caving	_____Rafting	_____Snow Climb
_____Cooking	_____River crossing	_____Snowshoeing
_____Cycle	_____Rappel	_____Solo
_____Dog sledding	_____Ropes course	_____Swim/Dip
_____Glacier travel	_____Rock climbing	_____Transportation
_____Hike no pack	_____Run	_____Unaccmp. Trav.
_____Horse	_____Sail	_____Urban activity
_____Initiative Game	_____Service	

Other(explain)_____

IMMEDIATE CAUSE (prioritize major applicable categories 1, 2, 3, etc.)

____Altitude	____Falling rock	_____Technique
____Avalanche	____Failure to follow instructions	_____Psych
____Cold Exposure	____Falling tree/branch	_____Screening
____Carelessness	____Immersion/submersion	_____Supervision
____Hygiene	____Intoxication (alcohol/drugs)	_____Sunburn
____Dark/visibility	____Instruction	_____Tech System
____Dehydration	____Lightning	_____Unfit
____Equipment	____Misbehavior	_____Unknown
____Exceeded ability	____Missing/Lost	_____Weather
____Exhaustion	____Hazardous animal/insect_____	
____Fall/Slip on trail	____Overuse injury	
____Fall on snow	____Preexist. medical condition	
____Fall on rock	____Plant poisoning/toxicity	

____Other(explain)_____

NARRATIVE: Describe the incident. What, how and when it happened, any medical treatment, and the final medical outcome or diagnosis.

_____

_____

_____

_____

_____

_____

ANALYSIS: Include any observations, recommendations or suggestions regarding prevention.

_____

_____

_____

_____

_____

Report prepared by: _____ Position: _____ Date: _____

Signature: _____

Date: _____

Patient Report:

Name_____

Age_____ Sex_____

Chief Complaint(PQRST)_____

_____

Date & Time of Incident_____

History of Present Illness/MOI_____

_____

_____

Vital Signs (quantity and quality)

Time	LOC	Pulse	RR	BPT°	CRI	SCT	Pupils

Physical Findings/Appearance_____

_____

_____

Past History_____

Allergies_____

Medications_____

Medications Administered	Amount	Date/Time

Emergency Care Rendered/Changes in Patient's Condition_____

_____

_____

Details of Evacuation Plan(timetable, backup, pickup point)_____

ADVENTURE PROGRAM INCIDENT REPORTING PROJECT
DEMOGRAPHICS COVER SHEET

Instructions

In order to develop incident rates by activity it is necessary to gather accurate participant hours for staff, participants, students, and clients. For the programs represented in the incident data sheets you are submitting, please include the pertinent activity, participant, and staff information.

Tracking participant and staff hours by activity is an ongoing process beginning with the leader's end of course evaluation. Following every trip, the leader should complete a form that gathers the data by activity and submit this to the program director. With ongoing tallying throughout the year, the end of the year report becomes a simple process. Without diligent ongoing reporting, the end of year report is an overwhelming task.

1. Program Name _____
   Address _____
   Contact Person _____
   Contact Person's Phone # _____

2. Choose an activity description from this list, or if you choose "other", please specify the activity.

Activity

Backpacking
Biking (mountain)
Biking (touring)
Camping (general in camp time)
Canoeing (flatwater)
Climbing (rock)
Climbing (artificial walls)
Climbing (ice)
Hiking (Day)
Initiatives and Team Challenges
Kayaking (whitewater)
Kayaking (sea)
Mountaineering
Non-Activity (sleeping, eating etc.)
Rafting
Ropes course (low elements)
Ropes Course (high element)
Sailing
Sailing
Skiing (Nordic)
Skiing (alpine)
Snowshoe
Sports and Recreational Games
Transportation (vehicles, to and from activity)
Travel/Study Expedition
Water (swim, wade, snorkel)
Work Projects
Other (specify)

3. For each pertinent program activity, please submit the following information.

Example 1 Hiking (day)

Activity *Hiking (day)*					
# Participants	20	X # hours	40	= the participant hours	800
# Staff	4	X # hours	40	= the staff hours	160
Add participant & staff hours to get total activity hours					960

Example 2 Climbing (rock)

Activity *Climbing (rock)*					
# Participants	10	X # hours	16	= the participant hours	160
# Staff	4	X # hours	16	= the staff hours	64
Add participant & staff hours to get total activity hours					224

About the WRMC

The Wilderness Risk Managers Committee is a consortium of outdoor schools, guide services, organizations and land managers that pursue or administer human powered adventure in backcountry wildlands. The committee's goals are to work towards better clarification, understanding and management of risks in the wilderness. The committee has set an agenda that involves discussion oriented examination of current issues within the outdoor education and wilderness program industry. The committee wants to serve as an informal think tank, providing better understanding and coordination in the outdoor education arena.

The WRMC is currently made up of representatives from the following organizations.

National Outdoor Leadership School
Association for Experiential Education
Wilderness Education Association
National Park Service
Boy Scouts of America
Assoc. for Outdoor Recreation and Education
Outward Bound USA
Student Conservation Assoc.
American Alpine Club
Wilderness Medical Society

In addition to sponsoring an annual Wilderness Risk Management Conference the WRMC has also embarked on an ambitious project to continue Hale's work and gather data on incidents and accidents from

member organizations and other wilderness based programs. The compilation of this data in a consistent format through the Adventure Program Incident Reporting Project will provide valuable information for comparing accident rates of wilderness education programs to other activities such as sports and other so called "high risk" activities.

ABOUT THE ASSOCIATION FOR EXPERIENTIAL EDUCATION

The Association for Experiential Education (AEE) is a not-for-profit, international, professional organization with roots in adventure education. committed to the development, practice and evaluation of experiential learning in all settings.

AEE sponsors local, regional, and international conferences, projects, seminars, and institutes, and publishes the Journal of Experiential Education, the Jobs Clearinghouse, directories of programs and services, and a wide variety of books and periodicals to support educators, trainers, practitioners, students, and advocates. The AEE demonstrates its committed to the enhancement of quality and risk management in adventure programming by offering the opportunity to programs to conduct peer review and pursue AEE's Adventure Program Accreditation.

AEE's diverse membership consist of individuals and organizations with affiliation in education, recreation, outdoor adventure programming, mental health, youth service, physical education, management development training, corrections, programming for people with disabilities, and environmental education.

To receive additional information about the Association for Experiential Education call or write to:

Association for Experiential Education
Adventure Program Incident Reporting Project
2305 Canyon Blvd., Ste. # 100
Boulder, CO 80302-5651
(303) 440-8844
(303) 440-9581 fax